



Psycho-Social Relationships and Academic Achievement in Early Adolescence

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Dedicated to my beautiful girls, Amelie Grace and Lucy Jane, who always make me smile.

May you always aim high and never forget to dream.

Love always,

Dad xo.

Declaration of Originality

This thesis contains no material which has been accepted for a degree or diploma by this University or any other institution, except by way of background information and duly acknowledged in the thesis, and to the best of my knowledge and belief no material previously published or written by another person except where due acknowledgement is made in the text of the thesis, nor does the thesis contain any material that infringes copyright.

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The research associated with this thesis abides by the international and Australian codes on human and animal experimentation, the guidelines by the Australian Government's Office of the Gene Technology Regulator and the rulings of the Safety, Ethics and Institutional Biosafety Committees of the University.

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Publications Arising from the Present Study

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Abstract

This research explored the academic achievement of early adolescents and the interactions between the following six psycho-social variables: friendship patterns, emotional and behavioural development, coping skills, self-concept, personal values, and the classroom learning environment. The study specifically sought to address the following research questions: 1. What is the influence of friendship patterns on middle school students' mathematics performance?; 2. What is the influence of friendship patterns on middle school students' English performance?; 3. What are the interactive influences between friendship and academic achievement in mathematics and English in the middle school years?; 4. What is the validity of the Children's Value Profile (Fyffe, 2006) for use with adolescent students?; 5. What are the gender differences on the measures of friendship patterns and quality, adjustment, self-concept, coping skills, personal values, classroom environment and academic achievement?; and 6. What are the quantitative and qualitative differences in these variables between high and low friendship groups?

Three non-government schools and one government school were selected for the study. The schools represented both metropolitan and provincial locations, and co-educational and single sex schools, in two states of Australia. The research was conducted on a sample of 266 early adolescents (59% male) with a mean age of 13 years and 5 months ($SD = 1$ year & 1 month). These participants completed seven self-report psycho-social instruments during the initial data collection phase. The first measure completed by the participants was a Friendship Nomination Form, followed by six psycho-social measures comprising the: 1. Friendship Quality Scale (FQS; Bukowski, Hoza, & Boivin, 1994); 2. Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997); 3. Coping Strategy Indicator – Short Form (CSI-S; Amirkhan, 1990); 4. Self-Description Questionnaire II – Short Form (SDQ-II-S; Marsh, 1990b); 5. Children's Values Profile (CVP; Fyffe, 2006); and

6. What is Happening in this Classroom Scale (WIHIC; Fraser, McRobbie, & Fisher, 1996).

The initial questionnaire assessment of the students occurred late in the academic year.

The second phase of the investigation involved individual interviews to explore aspects of students' relationships with their nominated best friends. These structured interviews were conducted in the following academic year on a cohort of 37 students from the sample selected because they either scored in the highest or lowest section on the friendship nomination measure. Of this cohort, 16 were identified as having a high friendship score and 21 were identified as having a low friendship score. Analysis of the interview data revealed some qualitative and quantitative differences between these groups. Low friendship students were characterised by clustering into three related word groups: friends, time, and school. In comparison, the words used by students in the high friendship group were characterised by clustering into three related groups: friends, school, and person.

The quantitative data from the psycho-social instruments were analysed to explore gender differences. It was demonstrated that female students were more likely than males to describe their relationship quality with their best friend as higher in aspects of caring interactions and companionship. In terms of mental health, female students perceived a higher level of well-being than males and a greater ability to cope by seeking help from their friends and by using problem solving strategies. In comparison, males were more likely to place importance on the value of sports participation, were more likely to have experienced bullying in the school context, and they viewed themselves as less honest compared to their female peers.

Using structural equation modeling, it was demonstrated that the students' friendship patterns and social relations significantly influenced the students' English and mathematics academic outcomes. The final measurement model demonstrated that those students who had more friendships achieved better end of year academic results in the curriculum areas of

mathematics and English. This model also highlighted the importance of students' level of self-concept in English and mathematics on students' English and mathematics achievement. The importance of students' personal values was highlighted in the model with greater achievement in English predicted by higher value placed on numeracy and literacy activities. Because the Children's Values Profile (Fyffe, 2006) is a recently developed psycho-social instrument and, to date is untested with early adolescent students, its structural properties were of interest in this study. The Children's Values Profile yielded a twelve factor solution when administered to an adolescent population, compared with its original seven factor structure for primary school aged students. Of specific interest was a newly identified factor for adolescents: Future Focus.

In conclusion, this study validates the need for professionals working with adolescents to consider the interactive and iterative relationships between adolescents' psychological and social well-being, their academic achievement, and friendship patterns. In particular, the results suggest that psycho-social variables and the social arena have the potential to make a significant positive contribution to the academic achievements of middle school students.

Chapter 1: Introduction

The early years of secondary school offer students the opportunity to consolidate their learning from primary school in order to develop a more robust set of academic skills, rich in complexity and challenge. These so called ‘middle years of schooling’ offer much promise for educators in improving academic outcomes and peer relationships, but at the same time there is a risk of academic decline, disengagement from school, and other such negative effects within this adolescent development period (Masten, Telzer, Fuligni, Lieberan, & Eisenberger, 2012). As a consequence, while the middle years of schooling has received considerable attention in the research literature, further exploration is needed of the variables that contribute to enhanced academic performance in the middle years (Duchesne, Ratelle, & Roy, 2012; Pendergast, 2006).

The individual characteristics of students have received considerable attention in the research literature and it is typically accepted that factors such as gender, age, cognitive ability (IQ), attention and motivation are all factors critical to academic performance in the middle years of schooling (Veronneau, Vitaro, Brendgen, Dishion, & Tremblay, 2010). Kokkinos and Hatzinikolau (2011) cautioned, however, that this emphasis on describing individual development and functioning has shifted in recent times to consider the contexts in which students’ learning takes place. Such areas of study may encompass a multitude of contexts, for example in family, peer group and classroom settings (Kokkinos & Hatzinikolau, 2011). Further, it is believed that social-emotional factors such as friendship relationships and peer support have a greater role to play in the explanation of the academic performance of adolescents in the middle years of schooling, compared to other school periods (Bissell-Havran & Loken, 2009; Ellis, Marsh, & Craven, 2009).

The influence of peers is important in the context of learning as schooling is a social endeavour (Bergin & Bergin, 2009; Phillipson, 2009). From the sociocultural theory of

Vygotsky (1978), learning occurs as the interplay between an individual's cognitive capacity to learn and their social interactions with others such as teachers, family, or peers. In essence, this context-based theory is based on two principles: 1. that the possibility of development is defined by genetics; and 2. social interactions are necessary for genetic potentials to achieve optimal development (Avan & Kirkwood, 2010). Learning and human development is conceptualised, therefore, as a cultural process (Phillipson & Phillipson, 2007). Such a social learning perspective has an important role to play in the present study as it is seen that the formation and construction of an individual's new knowledge first occurs in social settings before being assimilated and applied to new contexts (Hay, Callingham, & Wright, 2013).

Attachment theory is one of the preeminent theories when exploring the friendship patterns of adolescents (Bowlby, 1969). It offers a developmental perspective which is useful and appropriate. Attachment theory focuses on the significant relationships that students develop over a period of time, initially with their parents, before moving on to more complex relationships with their peers and teachers in more formal school settings (Law, Cuskelly, & Carroll, 2013; Rubin et al., 2013). Previous research has demonstrated that bonding with teachers and other significant adults (such as sport coaches) is an important extension of attachment relationships (Chapman, Buckley, Sheehan, & Shochet, 2013). Similar to adult attachments, during adolescence, peer relationships take on much greater importance such that friends offer an important avenue for support and reassurance beyond family arrangements (Bergin & Bergin, 2009; Rosenthal & Kobak, 2010; Veronneau & Dishion, 2011). Despite the evidence supporting the importance of friendship attachment and socially constructed learning in adolescence, limited research exists, particularly in the Australian context, exploring the relationship between friendship and academic achievement (Estell & Purdue, 2013).

Academic Achievement

For the purposes of the present study, the term ‘academic achievement’ refers specifically to students’ academic abilities as measured by outcomes for end of semester school-based achievement testing. English and mathematics results were the focus of the present study. While there are a number of conceptual terms which are typically used interchangeably to describe components of academic abilities (for example, ‘performance’ or ‘attainment’), academic achievement has been selected with the purpose of describing the results that students actually achieve in their particular educational facility in a given academic year.

The exploration of factors that lead to improved academic achievement has an important role to play in adolescent developmental studies. A range of indicators point to the importance of competent academic performance for young people in formal schooling for future employment prospects, school engagement, future relationship qualities, and decreased risk of mental health issues (Adams & Cantin, 2013; Casillas et al., 2012; McLeod, Uemura, & Rohrman, 2012). Internationally, there is evidence from the Programme of International Student Assessment (PISA) that has consistently demonstrated the strong relationship between self-beliefs and academic achievement (Parker, Marsh, Ciarrochi, Marshall, & Abduljabbar, in press). Virtanen and colleagues (in press) propose that a decline in student engagement in schooling occurs during the transition from primary to secondary education. Clearly this juncture is important to examine, both in the context of academic and social-emotional development.

Research Focus

The present thesis was specifically designed to explore issues pertaining to friendship and academic achievement in adolescence by examining peer relationships in the context of

four Australian middle years' classrooms. The primary aims of the present investigation were to extend theory, research and practice by:

- a) examining the influence of friendship patterns on middle school students' mathematics performance;
- b) examining the influence of friendship patterns on middle school students' English performance;
- c) determining the interaction influences between friendship and academic achievement in mathematics and English in the middle years of schooling; and
- d) extending previous research by exploring the validity of the Children's Value Profile (Fyffe, 2006) for use with adolescent students.

This study addresses key deficits of previous research by employing sound research methodology to:

- a) critically examine the psychometric properties of the measures used in the study;
- b) incorporate participants from urban and regional areas, as well as government and non-government schools in Australia;
- c) incorporate an harmonious combination of quantitative and qualitative research methods to investigate the research questions; and
- d) conduct a statistical analysis that addresses the research questions.

Overview of the Dissertation

Following this introductory chapter, Chapter Two provides a review of the literature related to: attachment theory, friendship and academic achievement in adolescence and the influence of friends on psychological health. The content of the literature review is centred upon the middle years of schooling and a sound rationale for the study is advanced. The key research questions are articulated in this chapter. Chapter Three outlines the sample of students in the study; the measures of the study; and the procedure used in data collection.

Chapter Four outlines the results of the study. Chapter Five provides a robust discussion of the results obtained, and an exploration of the implications of the findings for future educational research and practice.

Chapter 2: Literature Review

The purpose of this chapter is to outline the rationale for undertaking the present study and to provide an overview of the previous research in the field. The chapter begins with a discussion of the developmental period known as adolescence, and provides a critical overview of previous studies in the field. Research identifying the importance of friendship in adolescence is examined, followed by a review of evidence linking adolescent friendship to important social, academic, and mental health outcomes. Finally, the implications of this research evidence are outlined with respect to the present study. This chapter substantiates the hypothesis that adolescence is a key time for peer relationships and that these friendships are important for the academic and social-emotional well-being of young people.

Adolescence

With a number of 1.8 billion, the present generation of people aged 10 to 24 years, comprise a quarter of the world's population (Sawyer et al., 2012). With such a significant proportion of the world's population falling into this developmental stage, it is important that educators and social scientists have an appreciation of the ways in which young people impact upon each other, and the ways in which educators may work to positively influence the social, educational, and health outcomes for young people. Compelling evidence from Hattie (2009) supports that student achievement is a multi-dimensional construct that requires exploration of a number of different psycho-social variables.

Derived from the Latin *adolescere* meaning 'growing up', adolescence is a busy time for young people. It is a unique developmental period involving challenges and changes in the physical, psychological, affective, social, academic and cognitive development domains (Cunningham, Werner, & Firth, 2004; Gherasim, Butnaru, & Mairean, 2013; Hall-Lande, Eisenberg, Christenson, & Neumark-Sztainer, 2007; Wentzel, 1998; Wenz-Gross, Siperstein,

Untch, & Widaman, 1997). The social and academic lives of adolescents are the primary focus of this dissertation and thus will be the focus of the introductory literature review.

Physically, adolescence is characterised by growth, increased sexual development, bodily maturation and cognitive and psychological changes (Hoyt, Chase-Lansdale, McDade, & Adam, 2012). The brain undergoes a period of substantial structural and functional remodeling during adolescence, particularly with respect to the limbic and cortical regions (Eiland & Romeo, 2012). There is also evidence to suggest that there is a decreasing age of puberty onset in recent decades as a result of improvements in childhood hygiene, nutrition, and health (Sawyer et al., 2012). Combining these factors with increased levels of education, and later marriage and child-rearing, Sawyer and colleagues (2012) maintained that adolescence, as a developmental period, has extended out in contemporary times, such that there is an earlier age of puberty onset and later ages at which traditional adult roles are adopted.

In terms of psychological development, the period of early adolescence is often a challenging time. Conceptualised by Wang and colleagues (2013), psychological development in adolescence involves challenges and opportunities in terms of both risk and protective factors. Perhaps the best example of this is in regard to self-regulation skills. The development of appropriate skills of self-regulation is critical for later behavioural and emotional outcomes. For example, adolescents who display an enhanced ability to choose appropriate responses in the presence of competing demands are more likely to achieve better quality adjustment (Wang, Brinkworth, & Eccles, 2013). In a similar fashion, King and colleagues (2013) reported that adolescents who were slower to develop and display self-regulation skills were more likely to experience externalising difficulties later in their developmental trajectory. In addition to self-regulation issues, the maintenance of an adolescent's self-concept becomes increasingly dependent upon one's social reputation, and

as a result, social interactions are central to the adolescent experience (Burnett, Bird, Moll, Frith, & Blakemore, 2009).

Socially, adolescence is the developmental stage that offers young people the opportunity to broaden their social spheres, extending from the previous confines of immediate family relationships. Friendships are most prominent during the early to mid-adolescent years (11 to 16 years) where the influence of parents wanes and the lure of social interactions outside of the family unit take hold (Marion, Laursen, Zettergren, & Bergman, 2013). Siennick and Osgood (2012) noted that free time comprises as much as half of US youths' waking hours and that during this free time there is potential for risky and antisocial behaviour, particularly during unstructured and unsupervised social activities. In addition to liberal amounts of free time, adolescents are exposed to a wider variety of people with whom to interact including, but not limited to, peers, teachers, clergy, team-mates, co-curricular coaches and members of the wider community (Benson, Leffert, Scales, & Blyth, 2012; Wellham & Hickey, 2009).

Romantic involvement also increases in the adolescents' social world along with a widening of social interactions within the peer group (Johnson, Crosnoe, & Thaden, 2006; Marion et al., 2013). Rosenthal and Kobak (2010) reported that adolescents' romantic involvement often commenced in the context of mixed gender peer groups, with the importance of these groups continuing into mid and late adolescence. Adding to this mix is the notion that adolescents are exposed to new social and physical environments where there is an increased potential for risk taking behaviour, and even harm (Furr-Holden, Milam, Reynolds, MacPherson, & Lejuez, 2012). Conflict is sometimes a theme in adolescent friendships with adolescents reporting up to one disagreement per day with close friends, in comparison to three or four disagreements with parents per day (Ehrlich, Dykas, & Cassidy,

2012). Being further away from the family, both physically and psychologically, presents many adolescents with both new opportunities and challenges.

Traditionally, the study of adolescent development defined adolescence as a period of “storm and stress”, whereby entering into adolescence was seen as a disruption to normal developmental functioning (Hoyt et al., 2012). Positive well-being was viewed only as the absence of any negative behaviours, rather than a balanced perspective incorporating both sides of regular developmental functioning. Contemporary thinking, however, places adolescence as a developmental period during which young people negotiate important life transitions (Ellis, 2004; Seginer & Somech, 2000). These life transitions are characterised by significant relationships challenges that indirectly and directly have an influence on the adolescents’ schooling, social relations and psychological development.

Friendships in Adolescence

An examination of the friendship networks of adolescents is at the heart of the present study. While the reasons for its importance are expanded upon in the present chapter, the factors lending support for the need to examine adolescent social connections may be summarised as: (a) friends provide assistance with psychological adjustment; (b) having friends can be of benefit to academic achievement; (c) adolescents spend increasing amounts of time in the company of their friends away from the family home; and (d) these friendships are crucial aspects of the lives of students in the middle years of schooling and beyond (Destin, Richman, Varner, & Mandara, 2012; Marion et al., 2013).

Friends can be an important source of assistance and psychological security in early adolescence. Ellis (2004) noted that young people prefer to seek information, support, and advice on personal problems from their friends, rather than from their parents. There is research evidence to support that friendships are an important factor to consider in a study of adolescent academic achievement (Flashman, 2012). Indeed, friendship has been

demonstrated over numerous studies to have predictive power across a wide range of indices, even from the pre-school years (Gest, Rulison, Davidson, & Welsh, 2008). For example, Crosnoe, Cavanagh, and Elder (2003) identified that adolescents who had friends who liked school, or did well at school had fewer academic problems when compared with students whose friends were less academic. There is also evidence that positive relationships in adolescence may relate to people being less susceptible to negative social experiences in later life (Masten et al., 2012). For example, Marrion and colleagues (2013), using data from a longitudinal study, found that peer rejection uniquely predicted both global life satisfaction and perceived relationship quality in adulthood. Further to this, Destin and colleagues (2012) reported the importance of subjective social status, which is a student's perception of their place in the broad social hierarchy within a school setting. In a study of 430 American secondary school students, Destin et al. (2012) reported a very strong correlation between subjective social status and the experience of depressive symptoms. Those students who perceived themselves as lower in friendship and social status were more likely to experience emotional distress and depression. Of further interest to educators was their research finding of a significant direct relationship between these students' depressive symptoms and poorer outcomes in study skills, habits, and students' academic achievement (Destin et al., 2012). Friendship and social status matter, therefore, for both the domains of mental health and academic achievement.

Best friends are noted to be a source of important resources in adolescence; indeed, these resources are also related to longer term outcomes such as entry to tertiary education programs (Cherng, Calarco, & Kao, 2013). There is also evidence to suggest that the loss of a best friendship is a significant risk factor for psychological maladjustment, particularly where that loss occurs in early adolescence (Bowker, 2011).

One of the key themes of research into adolescence is the changes that occur in social relationships during this period and the influence of peers and friends on the behaviours and outcomes of individuals (Hay & Ashman, 2003; Martin, 2005; Nickerson & Nagle, 2005; Siennick & Osgood, 2012). It is generally understood that, during adolescence, networks of relationships outside of the immediate family unit widen and take on a greater significance (Ingles, Hidalgo, & Mendez, 2005). Peer friendships are considered to act as a marker of early adolescents' search for greater autonomy from their parents as they offer greater independence in their selection of social relationships (Lam & Ducreux, 2013; Nickerson & Nagle, 2005). During adolescence, most adolescents have at least one mutual (reciprocal) same-sex peer friend in their grade and school (Bowker, 2011; Kenny, Dooley, & Fitzgerald, 2013). Identity formation is seen as a major developmental task of adolescence and increasing social involvement is one way of developing such self-representation (Ferguson, Hafen, & Laursen, 2010). The reciprocity of social interactions with peers is one way which helps to form an adolescent's identity. These interactions are the cornerstone of the present investigation.

Social relationships are an important dimension in the middle years of schooling and in adolescent development research. It is also a core focus of this research study. The main quantitative dimension of peer social relationships and social acceptance in adolescence relates to whether or not the individual has an acknowledged mutual reciprocal friendship with a peer (Brendgen et al., 2001; Parker & Asher, 1993; Wentzel et al., 2004). The main methods of assessing this mutual reciprocal friendship include: (1) friendship nominations; (2) ranked-friendship preferences (Demir & Urberg, 2004; Wentzel et al., 2004); and (3) surveys of perceived friendships (Bukowski, Hoza, & Boivin, 1994). Contemporary researchers, such as Bukowski and colleagues (1994), have further expanded this area of research with the development of comprehensive assessment tools. Friendships are defined

in the present study as dyadic social relationships based on voluntary and dynamic social interactions (Doumen, Smits, Luyckx, Duriez, Vanhalst, Verschueren, & Goosens, 2012; Gifford-Smith & Brownell, 2003; Zarbatany, Conley, & Pepper, 2004).

Vygotsky's Sociocultural Theory and Adolescence

Social relationships are at the core of the present study as teaching and learning processes, by their very nature, rely on social interactions. Although there are a number of learning theories that explain variance in student performance, Vygotsky's sociocultural theory (1978) offers the most promising conceptualisation of students' learning endeavours in the middle years of schooling. Central to Vygotsky's theory is the notion that learning occurs in contexts where individual students play an active role in their own learning, while interacting with other peers in the process (Hay et al., 2013). Critical to the classroom context is the idea that teachers can tap into students' natural verbal energy and create opportunities for discussion within the classroom, such that students are then able to construct their own understanding of the academic work in an active and meaningful fashion (Schreiber & Valle, 2013).

Schreiber and Valle (2013), in their examination of social constructivist teaching strategies, outlined a number of perspectives on teaching and learning using a Vygotskian approach. At the core of their work was the notion that students interact socially with their peers to develop their own meanings of academic concepts. Learning, therefore, is shaped by the social context in which students operate. A teacher's role is to guide and mentor as the students take ownership of the learning process. Teaching is seen as most effective if provisions are made for students to have authentic, real-world learning where teachers have taken into account what students can do in their interactions with more capable peers (Gordon, 2009). For Vygotsky (1978), this learning occurs in the 'zone of proximal development' (ZPD) which is described as the difference between a student's existing

learning and their learning capabilities when new environmental stimuli are provided (Avan & Kirkwood, 2010). The zone of proximal development is a process of ongoing re-classifying, reasoning and reviewing of previous understandings in order to incorporate prior knowledge as a precursor to new knowledge being developed (Hay et al., 2013).

Sociocultural theory offers an appropriate theoretical basis with which to interpret the present study. By virtue of its nature, sociocultural theory affords an opportunity to examine learning from a social perspective, incorporating both the way students learn in the context of their peers, but importantly incorporating an examination of the ways in which teachers facilitate learning in their respective classrooms. Classroom environments are seen as critical pieces of the multidimensional nature of student learning and achievement (Hattie, 2009).

Attachment Theory and Adolescence

From infancy, children develop important relationships with their immediate family members and, over time with others, particularly same-age peers (Zarbatany et al., 2004). Based on their early and ongoing experiences with their parents and other adults, children develop expectations of how to behave in social settings and these patterns extend into new relationships with others to enable the child to feel confident that the world and relationships are secure and predictable (Bowlby, 1969). Children who develop a secure attachment style with parents and others are more likely to be confident within themselves, and central to the present study, trust both themselves and their friendship partners (Scharf, 2013). A recent study by Scharf (2013) of 260 Israeli children in fourth and fifth grade identified that both attachment security and positive self-perception are related to pro-social strategies within friendship. While Scharf's (2013) study was centred upon children, recent work by Ehrlick, Dykas, and Cassidy (2012) studying an adolescent population proposed that adolescents with warm and supportive parents are more likely to have positive peer-related outcomes, such as greater peer acceptance. These findings have important implications as they suggest that

there are similarities between the social skills required to be successful within a family and within a cohort of school age peers.

During adolescence, peer relationships take on a much greater importance for young people such that friendships offer an important avenue for support, development and reassurance (Litwack, Aikins, & Cillessen, 2012; Rosenthal & Kobak, 2010). Using peers as the primary source of social interaction, adolescents are more likely to experience a variety of opinions from outside the family unit and there is evidence that this may serve to both encourage and discourage the academic attributes which contribute to student success (Lynch, Lerner, & Leventhal, 2013).

Originally applied to children and infants, adolescent attachment theory sees that attachment consists of proximity seeking, a safe haven, and a secure base (Nickerson & Nagle, 2005). The formation of such new attachment bonds in adolescence requires the reorganization of the enduring bonds established during infancy and early childhood with other significant caregivers such as parents (Rosenthal & Kobak, 2010). Nickerson and Nagle (2005) explained that proximity seeking involves approaching, staying near to, and making contact with the attachment figure. Furthermore, they proposed that the attachment figure provides protection and reassurance in the face of a threat. For the purposes of the present study, attachment figures are defined as friends with whom the adolescent identifies. Attachment theory offers an appropriate theoretical framework with which to conceptualise the present study. Attachment theory provides a framework to examine behaviour from a social environmental and relational perspective, as opposed to a singular, within-child explanation (Slater, 2007). Further, attachment theory offers a coherent framework for explaining the emotional reactions that underlie social identity and friendship relationship qualities (Doumen et al., 2012). In its broadest sense, attachment is the propensity for people to establish closer mutual relationships with significant others (Ainsworth, 1989;

Doumen et al., 2012). In a developmental sense, positive emotional attachments to friends promote healthy social, emotional, and academic functioning in adolescents (Rubin et al., 2004; Wentzel, Barry, & Caldwell, 2004). Adolescents who lack such important emotional attachments with friends are more likely to experience difficulties, particularly in areas of psychological adjustment (Rubin et al., 2004).

Psychological Adjustment in Adolescence

A number of Australian and international studies have articulated concerns about the rates of psychological distress that can accompany adolescence (Cunningham et al., 2004; Davis, Martin, Kosky, & O'Hanlon, 2000; Ellis, 2004; Sawyer et al., 2001). For example, the prevalence of mental health problems in Australian 12 to 17 years old has been estimated to fall between 14% to 25% of the adolescent cohort (Campbell, 2004; Eacott & Frydenberg, 2008; Sawyer et al., 2001). Similar figures are reported in other Western countries such as Canada where it is estimated that 14% of children aged 4 to 17 years have clinically significant disorders, and the United States where estimates are projected to be between 20% to 25% (Flett & Hewitt, 2013; Merikangas et al., 2010). In addition, within Australia, the estimation is that there are approximately 100,000 individuals, aged 5 to 25 years, who develop various emotional disorders each year (Davis et al., 2000).

A number of psychological disorders, such as depression, anxiety, and psychosis, often have their initial onset during adolescence (Davis et al., 2000), particularly if there is evidence that the young person is involved with substance abuse (Campbell, 2004; Frey, Nolen, Van Schoiack Edstrom, & Hirschstein, 2005; Ingles et al., 2005). Depressive disorders and anxiety are noted as the two most prevalent mental health concerns for young people in Australia (Eacott & Frydenberg, 2008). These figures are similar to those from the United States where Merikangas and colleagues (2010) reported findings from a nationally representative sample of 10,213 adolescents. Anxiety disorders were reported to be the most

common clinically significant disorder (31.9%), followed by behavioural disorders (19.1%), and mood disorders (14.3%).

Pattison and Lynd-Stevenson (2001) reported that a depressive episode is the single most significant risk factor for adolescent suicide, even when accounting for other potential risk factors such as substance abuse, bipolar disorder, and conduct disorder. There is evidence to suggest that depressive problems increase substantially in adolescence, particularly for girls (Oldehinkel, Rosmalen, Veenstra, Dijkstra, & Ormel, 2007). This is consistent with figures from the United States where it is estimated that 9% of students will have had a depressive episode by the end of their middle schooling, with 20% of students experiencing the same by the conclusion of their high school years (Gillham et al., 2006). Adolescence, therefore, is a developmental period during which a number of mental health concerns arise for a significant proportion of young people.

The Importance of Friendship to Psychological Adjustment in Adolescence

Adolescents show an increasing reliance on their friends as a source of support and psychological reassurance. Indeed, it has been reported that the presence of meaningful connections with friends is a strong indicator of psychological health in adolescence (Hall-Lande et al., 2007; Hay & Simmons, 2011). Friends serve as a 'frame of reference' for adolescents to categorise, organise, and understand their expanding spheres of social interactions (Brendgen et al., 2001; Horn, 2003; Wentzel et al., 2004). Further, there appear to be a number of benefits for adolescents who establish positive friendships and group membership (Newman et al., 2007). These outcomes include lower levels of depression, higher indices of happiness, positive indices of adjustment, and greater classroom involvement (Horn, 2003). Adolescents who have more friends in school have demonstrated decreased rates of school drop-out (Demuth, 2004), higher academic results (Flook, Repetti, & Ullman, 2005), better emotional adjustment (Brendgen et al., 2001), greater levels of

school connectedness (Cunningham et al., 2004), and higher levels of social self-concept (Wenz-Gross et al., 1997).

Despite the many benefits of friendship, there remain some students who have limited positive social interactions with classmates (Hay & Simmons, 2011). These individuals are often marginalised within larger peer networks and lack the requisite social skills to develop and maintain positive friendship relations (Choi & Kim, 2003). These students are at risk. Socially excluded adolescents find it difficult to 'break in' to friendship groups and have been demonstrated to have decreased levels of self-regulation as a result of their social exclusion (Newman et al., 2007). These 'low-accepted' adolescents (Parker & Asher, 1987) lack stable, healthy, and productive friendships and critically have a reduced opportunity to learn and practice the social skills needed to develop and maintain the very friendships they are looking for. Although the preceding information looks at those who lack friendships, there is also evidence to support a myriad of risk factors for those adolescents who engage in the highest levels of unstructured and unsupervised socialising with peers (Siennick & Osgood, 2012). While these students might have friendship relationships, the levels of unsupervised contact render these individuals most at risk from poorer adjustment, less attachment to school and lower socio-economic status (Siennick & Osgood, 2012; Wyn, 2009).

Students who lack social success and positive social interactions with friends are more likely to have poorer outcomes across a wide spectrum of adjustment indices (Hay, Ashman, & Van Kraayenoord, 1998; Hay & Simmons, 2011). For example, adjustment problems including low self-concept, depression, stress, anxiety, and social phobia have been demonstrated to be more prevalent in those students with poor quality social relationships (Wentzel et al., 2004; Wenz-Gross et al., 1997). Wentzel and colleagues (2004) argued that adolescents with fewer school friends were more likely to exhibit lower academic

achievement. In addition, Baumeister, DeWall, Cairocco, and Twenge (2005) identified that those students who were socially rejected by their peers tended to display poorer self-regulation skills which in turn, impacted on attentional and behavioural outcomes. Further to this, it has been suggested that difficulties with social relationships are both precursors and consequences of depressive symptoms in adolescence (Derdikman-Eiron, Hjemdal, Lydersen, Bratberg, & Indredavik, 2013). It has also been reported that some elements of students' emotional intelligence, such as peer relationship skills, are directly and indirectly related to students' academic outcomes (Luebbers, Downey, & Stough, 2002).

Johnson and colleagues (2006) and Flook (2011) noted that early adolescence is a key demarcation point in the differences in socio-emotional adjustment of the genders. There is evidence that interpersonal stressors are more depressogenic for girls than for boys during this developmental stage (Oldehinkel et al., 2007). Girls tend to demonstrate more reactivity to interpersonal stressors, particularly with friends, and this is seen to account for heightened levels of negative symptomology (Bouchard & Shih, 2013; Flook, 2011). In childhood and early adolescence, girls tend to be better adjusted than boys, whereas this pattern tends to reverse in mid-adolescence where boys tend to display better adjustment than girls and fewer depressive symptoms (Caravita & Cillessen, 2012; Johnson et al., 2006). In an examination of the gender differences in the rates of internalising and externalising psychological disorders of early adolescence, Besser and Blatt (2007) reported that there were significant differences between the genders. Girls reported symptoms consistent with anxiety, depression, and somatic issues, whereas boys reported more externally based symptomology consistent with aggression, conduct disorder and more general delinquency (Besser & Blatt, 2007). These psychosocial differences between genders were demonstrated to first emerge in early adolescence. This research suggests that an examination of adolescents' social

relationships specifically as they relate to their peer relationships is central to understanding adolescent development.

Bowker and Rubin (2009) examined friendship quality and self-consciousness in early adolescence. In particular, they examined public self-consciousness, excessive concern about the self as a social entity, and private self-consciousness, excessive rumination about one's internal thoughts and emotions. Their findings demonstrated a number of core outcomes of interest to adolescent psychology. Girls were more at risk for the negative outcomes of private self-consciousness, whereas boys were at a greater risk for negative outcomes associated with a public self-consciousness, such as how they behave and act in public group places. The claim is that positive friendships can exacerbate the internalising problems of self-conscious individuals, as they think "too deeply" and continue to dwell on what their peers, friends say or think about them. Taken together, these findings support the previous notion raised by Besser and Blatt (2007) in their discussion of internalising and externalising disorders.

In examining the role of peer rejection in academic and psychological risk, Wentzel (2003) and Newman et al. (2007) noted that adolescents who were rejected by their peers were less likely to have opportunities to interact with peers in a social manner and, as a consequence, had fewer opportunities to learn positive social interaction skills. It is argued that there is a reciprocal relationship between students' friendship levels and their ability to comprehend and engage in verbal and nonverbal forms of communication (Demir & Urberg, 2004; Ellis, 2004; Parker & Asher, 1993). For example, Parker and Asher (1993) identified that adolescents who were lower in peer acceptance and friendship levels also reasoned in less cognitively sophisticated ways and were less likely to maintain a long-term conversation with peers (Parker & Asher, 1993). It was also reported that adolescents who were not well liked by their peers had a smaller number of potential friends from whom to choose. This

finding implies that there may be a potential for such adolescents to ‘pool together’ and become a target sub-group for further group victimisation (Newman et al., 2007).

Zarbatanay and colleagues (2004) argued that researchers need to understand the communal and agentic (action) nature of friendship as an influence on behaviour. They described communal aspects as ones that help to ensure a feeling of interpersonal closeness within friendships. For example, these aspects may include loyalty, security, emotional support, and shared history. They described the agentic (action) aspects of friendship as based on individuation as a social process that bolsters an individual’s prominence within a social group. Examples of agentic aspects can include self-definition, acceptance, achievement, opportunities to rehearse skills, and knowledge. Kiefer and Ryan (2008) advanced this notion by reporting that boys tended to identify with action and status-oriented “public” goals, whereas girls were more likely to prefer the communal or connective aspects of social relationships (Ryan & Shim, 2012). This is further supported by the work of Kutnick and Kington (2005) who noted that boys preferred action orientation in their friendships, in comparison to girls, who tended to prefer interpersonal interactions that fostered a sense of trust, communication and loyalty. Furthermore, Oldehinkel and colleagues (2007) identified that boys focused more on action/agentic goals compared to girls, especially as it related to their own dominance of the peer group. This notion has an important role to play in analysis of patterns pertaining to adolescents’ friendship which will be outlined later in the dissertation.

School Transitions and Adolescence

Education is regarded in many quarters as the cornerstone of a civilised and productive society. In the context of modern Australian society, education and individual experience within the educational system has a profound effect on future life transitions and trajectories. Entry to the paid labor force, post-school training and income earning potential

are all factors that are linked with the duration of time in, and the quality of education received (Crosnoe, Riegle-Crumb, & Muller, 2007).

Following the lead from their North American counterparts, some Australian secondary schools and systems have sought to develop a system of education that caters specifically for the development and enhancement of early adolescents' academic and social needs (Chadbourne & Pendergast, 2005). This so-called "middle years of schooling" movement has been part of an educational discourse in Australia since at least the early 1990s (Bahr & Crosswell, 2011). The goal of middle years initiatives centres upon the creation of educational experiences to 'better fit' early adolescent (10 to 15 year old) students, rather than making students fit the school structures (Bahr & Crosswell, 2011; McNeely, Nonnemaker, & Blum, 2002; Pendergast, 2006). The expansion of middle schooling in Australia aligns with the aim of 'enhancing middle years' development', one of the action areas to result from the *Melbourne Declaration on Educational Goals for Young Australians* (MCEETYA, 2008).

At its core, the aim of middle year's education is to blend a primary school culture based more on the care of students, with a secondary school culture characterised by a subject academic orientation (Neuens, 2000; Pendergast, 2005; Sinclair & Fraser, 2002). To achieve this blend, the focus in middle schooling is upon social and support networks within a broad curriculum framework. This approach to pedagogy and curriculum is, in part, opposed to the increasing specialization and differentiation among separate subjects that can be found in the traditional secondary school. Middle schooling does not refer to buildings or school structures, but rather to the provision of educational experiences that meet the challenging abilities and aspirations specific to the developmental needs of young adolescents (Pendergast, 2006; Sinclair & Fraser, 2002). In focusing on adolescents, Sawyer and colleagues (2012) contended:

Thus, beyond academic achievement, schools are an important social environment for adolescents that promote peer connections, emotional control and health. School based interventions that create strong engagement between students and teachers and a feeling of emotional safety result in reduced substance misuse, violence, and other antisocial behaviours in adolescents. (p. 379.)

Along with personal and interpersonal changes, the adolescent student is also involved in the transition from primary to secondary education. This transition sees the student moving from a more supportive learning environment associated with primary schooling to the more independent learning expectations of secondary schooling (Lam & Ducreax, 2013; Simmons & Hay, 2010). For most students in Australia, this transition to a secondary schooling environment occurs in year seven or year eight (Pendergast & Bahr, 2012). On the transition away from the traditional primary classroom setting, Wentzel (1998) stated:

Often confounding these general developmental changes is a transition to a new school environment, which tends to be marked by adolescents' perceptions that teachers no longer care about them, and decreased opportunities to establish meaningful relationships with peers. (p. 209).

For some students, this transition to the middle years of schooling can cause a number of different social and academic difficulties as well as increased stress and test anxiety (Cantin & Boivin, 2004; Dan, Ilan, & Kurman, 2013; Duchesne et al., 2012; Rathunde & Csikszentmihalyi, 2005). Academic workloads typically increase and are accompanied by an increasingly specialised subject matter, greater movement

across campuses, and increasingly demanding assessment tasks (Effeney, Carroll, & Bahr, 2013). In addition, Cantin and Boivin (2004) noted that these difficulties may include adapting to new environments, stricter assessment procedures, more complex friendship relationships, interactions with a greater range of teachers and their different content expectations, and more social comparisons at a time of heightened self-focus and new scholastic and curriculum challenges. In addition, Ellerbrock and Kiefer (2013) reported that middle schools are often structured in ways that actually inhibit close social ties with larger class sizes and dense curricular matter impeding the formation of supportive contact between teacher and student. Davis (2006) argued that middle school students are at risk of feeling less competent than in their elementary years and are more likely to engage in maladaptive classroom behaviours. Duchesne and colleagues (2012) suggested that another pressure on students is to maintain prior academic performance in the face of major academic and personal flux. Kingery and Erdley (2007) described the transition to the middle years of schooling as a time which corresponds to increases in psychological distress. Worries for students in the middle years are typically categorised as worries about academic demands, teachers, or peers (Duchesne et al., 2012).

To encapsulate the notion of transition issues, Kiefer and Ryan (2008) used the term ‘transition stress’ to describe the pattern of events and feelings that might contribute to adjustment difficulties for students moving to a middle schooling setting. Further, they noted that those schools from lower socio-economic areas were less likely to be able to deliver high quality pedagogical and emotionally literate programs due to resource funding issues, and the level of social and education support in the home (Rutter & Maughan, 2002). Schools of these socio-economic backgrounds are, therefore, considered to be at a greater risk of having

students manifest 'transition stress' and the subsequent negative academic, emotional and social outcomes that are associated with this stress.

While Wentzel (1998) and Kiefer and Ryan (2008) described these transition issues in a somewhat negative light, Pendergast (2005) maintained that, increasingly, middle school educators are becoming more sensitive to the needs of young adolescents. The claim is that middle level education does seek to bridge the traditional gap between primary and secondary schooling by: (a) sustaining the engagement of young people in learning; (b) being attuned to the social and emotional needs of young people; and (c) fostering a sense of community and social connection within the school (McNeely et al., 2002; Pendergast, 2005).

Gender and Friendship

The examination of gender differences is important in the present study as there is a body of evidence to indicate that, (a) there are gender differences in friendship patterns (Black, 2000; Bukowski et al., 1994; Chang, 2004; Gifford-Smith & Brownell, 2003; Piko, 2001; Simmons & Hay, 2010) and, (b) that these differences are apparent from a very early age through to adulthood (Maccoby, 1990). These differences can be summarised under four points. First, there is a difference in the number of friends with whom the genders interact (Simpkins, Parke, Flyr, & Wild, 2006). Boys tended to prefer interactive group activities, while girls demonstrated a preference for dyadic or triadic interactions (Black, 2000; Scharf & Hertz-Lazarowitz, 2003; Siennick & Osgood, 2012). Second, there is evidence that boys have larger peer networks than girls but that they experience higher levels of conflict within their friendship groups than their girl counterparts (Black, 2000). Third, girls and boys differ in the levels of intimacy (Mackinnon, 2012), with girls reporting higher levels of friendship intimacy than boys (Johnson, 2004). Finally, there is evidence that girls wanted more social support than their boy counterparts and girls adopted more problem-solving strategies when

confronting stressful situations (Ayres & Leaper, 2013; Bowker, 2004; Martin & Gillies, 2004).

These four main gender differences will be explored in more detail in the following section. In terms of self-perceptions about the quality of their friendships, girls have reported higher levels of positive friendship quality than boys (Bukowski et al., 1994; Kingery & Erdley, 2007; Scharf & Hertz-Lazarowitz, 2003). Girls also rated their friendships consistently higher than boys on measures of satisfaction as well as on measures of intimacy (Scharf & Hertz-Lazarowitz, 2003). Girls tended to be more focused on emotional relationship communication, whereas boys were less likely to engage in emotional based interactions with their friends (Scharf & Hertz-Lazarowitz, 2003; Wang & Eccles, 2012). Girls preferred dyadic or triadic activities over group-based activities and have a greater tendency to share feelings with their friends. They may find friendships more intrinsically interesting and rewarding than boys do (Richard & Schneider, 2005). There is also evidence to suggest that girls are more likely to seek social support from their friends when they experience academic failure than boys, and girls are more likely to actively seek help from their teachers (Ryan & Shim, 2012).

While this might indicate potential benefits for girls within their friendships, a possible negative consequence for girl friendship groups is the issue of co-rumination. Co-rumination is defined as a dyadic process in which an individual discusses personal problems with another person to an excessive degree (Bouchard & Shih, 2013). Research indicates that females tend to utilise a ruminative coping style more than males (Bouchard & Shih, 2013; Newman et al., 2007; Rose, 2002). This coping style is characterised by a concentration on unpleasant events and situations combined with an extended focus on the negative feelings associated with such events (Hilt & Pollak, in press). It is important to note that girls in friendships are reported to be at a greater risk of taking on the problems and even distresses

of their friends and the possible negative psychological outcomes associated with these problems (Jose, Wilkins, & Spindel, 2012).

Compared to boys, girls have reported higher positive aspects of friendship quality and lower negative aspects of friendship quality (Brendgen, Markiewicz, Doyle, & Bukowski, 2001). Furthermore, when interacting, girls displayed more positive friendship comments and fewer negative criticisms when compared to boys. Brendgen et al. (2001) proposed that from middle childhood to adulthood, compared to boys, girls showed more responsive and supportive behaviours, higher levels of self-disclosure, and fewer conflicts in their friendships. These findings have been replicated by Richard and Schneider (2005) among preadolescent and early adolescent populations.

Gender friendship differences may reflect socialised differences through childhood and adolescence (Black, 2000; Brendgen et al., 2001; Scharf & Hertz-Lazarowitz, 2003). For example, Scharf and Hertz-Lazarowitz in their examination of social networks in schools hypothesised that girls are socialised to place more emphasis on inter-dependence, whereas boys are raised to value competition and independence. Further it has been claimed that girls identify with inclusion and care, whereas boys identify more with individuality and dominance (Brendgen et al., 2001; Scharf & Hertz-Lazarowitz, 2003).

Adolescent Values

There is evidence to indicate that children learn values very early on in their lives. Fyffe and colleagues (2004) reported that children most probably develop a culturally specific sense of right and wrong within the first two years of life. From early home life, values are shaped and formed in a number of ways with influences including family, but also extending to include school, personal relationships and friendships (Paciello, Fida, Tramontano, Cole, & Cerniglia, 2013). Schools, by virtue of their place in society, are perceived to be places to encourage and foster such personal values (Fyffe, 2006). Values are

typically defined as the principles and fundamental convictions to which an individual holds and serve as general guides to behaviour.

The inclusion of students' values in the present study is deliberate as there is a paucity of research regarding adolescents' values and, in particular, the influence of these on academic achievement. While it is broadly accepted that the values held by young people are a product of a number of different factors, relatively little is known about the nuances of individual values in the context of an adolescent population (Bilsky et al., 2013; Paciello et al., 2013).

Given the amount of time that young people spend with their friends in adolescence and the increasing level of independence this entails, it is appropriate that the present study seeks to explore their shared values in this developmental period. This examination is further supported by researchers who have contended that adolescence is a critical period for the development of self-identity and self-concept (Paciello et al., 2013; Simpkins, Fredricks, & Eccles, 2013). Certainly there is research evidence to suggest that self-identity, self-concept, social relationship, psychological well-being and school achievement are interconnected with respect to domains such as school achievement, self-esteem and depressive symptoms (Ferguson et al., 2010; Hay & Ashman 2012).

In an Australian curriculum initiative, the Federal Government through the Department of Education, Science and Training, released a draft *National Framework for Values Education in Australian Schools* in 2004. Following an international curriculum direction, the document charted a number of core values to be encouraged by Australian schools (Lovat & Clement, 2008; Walker et al., 2012). Non-government schools were mandated to display the chart of values for Australian schools as a criterion to continue to receive Commonwealth funding. The values to be encouraged within Australian students include: loyalty; courage; tolerance; perseverance; and compassion (Jones, 2009).

Although it is generally acknowledged that the development of personal values is an important goal of education policy, there appears to be much debate as to the content of what is to be taught, how it is to be taught and how it can be evaluated (Fyffe et al., 2004). Furthermore, Fyffe (2006) noted that while there is much emphasis on curriculum delivery of values programs in Australia, there is a lack of literature relating to the outcomes of student values education. In an attempt to address this issue, Fyffe (2006) developed the Children's Values Profile. This instrument was designed as a seven domain, multidimensional tool to explore the developmental character of the values construct, specifically in relation to students in a primary school setting. The values explored in the Children's Values Profile are: behavior, academic progress, self-concept, social, emotional intelligence, world view, and school climate. Despite representing a positive step towards exploring values in young people, the Children's Values Profile, in its present form, is a measure developed for primary school students and has yet to focus on the needs of early adolescent students. As a result, the present study is the first study to explore the possibility that the Children's Value Profile is acceptable for use in an early adolescent population.

Classroom Environment

The classroom environment has an important role to play in the present research. First, it is the place where adolescents spend the large majority of their time at school. It offers young people the opportunity to socialise, to monitor and model the behaviour of their fellow peers, and to engage in academic and other social-emotional developmental tasks (Taylor & Fraser, 2013). Second, the classroom environment offers adolescents the chance to purposefully engage with their teachers; a process which, if productive, offers the adolescent a myriad of benefits including classroom engagement, academic motivation, increased self-efficacy, and self-esteem (Sakiz, Pape, & Hoy, 2012).

The nature of students' classroom social environments has been the focus of much research over an extended period of time (Fraser, 1998; Moos & Trickett, 1974; Sakiz et al., 2012; Taylor & Fraser, 2013). This is not surprising given the large amount of time students spend in classrooms and the ways in which the classroom and its environment can impact on student outcomes. Classroom environments are seen as multidimensional constructs which encompass organizational, instructional and interpersonal dimensions (Kokkinos & Hatzinikolaou, 2011). There are two key issues which will be explored in this examination of classroom environment: 1. teacher support and 2. student support (Patrick, Ryan, & Kaplan, 2007).

Teacher support is defined by Ryan and Shim (2012) as the perceptions of students that their teacher likes them and cares about them as an individual. As an example of the impact of teacher support within the classroom, Hughes and colleagues (2008) noted that the relationships between students and teachers that are characterised by support and high levels of warmth and low levels of conflict are correlated with greater student academic achievement. This idea highlights that teachers have a significant role to play in the development of the classroom environment in which students operate (Ryan & Shim, 2012). Hughes and colleagues (2008) demonstrated that, for the early primary school years, the relationship between teachers and students helps to establish and refine the pattern of academic engagement for students. This in turn promotes further positive interactions with subsequent teachers and increases the likelihood of higher academic achievement. In addition, students' academic self-concepts are considered to be influenced by the level of support, positive feedback, and interest in the student's progress a teacher is perceived to provide (Hattie, 2009; Trautwein, Ludtke, Marsh, Koller, & Baumert, 2006). Taylor and Fraser (2013) reported that teachers who create a positive classroom environment for mathematics were likely to reduce students' mathematics anxiety. Such a strong notion of

teacher influence is further supported by literature pertaining to the middle years of schooling.

Davis (2006) listed four key areas in which teachers in the middle years affected the quality of students' motivation and the learning experiences they participate in. These are by the teacher 1. providing a stimulating learning environment; 2. involving students and instilling a sense of belonging to the class and the learning; 3. valuing learning; and 4. fostering students' social-emotional and psycho-social development. In addition, it has been reported that levels of cheating and performance anxiety within the classroom is more likely to increase when the teacher is perceived to be overly concentrating on students' performance goals, rather than promoting students' learning and psycho-social development (Trautwein et al., 2006). A key theme, then, is the perceived relationship with the significant adult in their classroom context is critical to a wide range of positive classroom indices. Patrick and colleagues (2007) reported that this emotional connection between students and the teacher is associated with more positive student engagement, more student help seeking behaviours, and greater levels of student academic achievement. Marsh, Martin, and Cheng (2008) contended that teachers do have a significant influence on the classroom environment, most specifically in the domains of creating enjoyment for the students and for fostering a caring student-teacher relationship. This in turn contributes to students' level of engagement, motivation and a sense of shared school goals. While the examination of the role of the teacher is important, it overlooks the role that students also contribute to the environment of the classroom. This is the second key point to be explored in relation to classroom environment.

In support of this idea of students contributing to their classroom environment, Nelson and DeBacker (2008) argued that students are likely to influence their classroom environment by the sheer virtue of the norms that are developed, modeled and valued within the

classroom. Importantly, it has been proposed that the support that students perceive from their fellow students, both emotionally and academically, can have positive benefits for the students' learning (Fraser, 1998; Moos & Trickett, 1974; Sakiz et al., 2012). Schwatz and colleagues (2006) contended that connection to peers can have the very real effect of enhancing cognitive engagement in the classroom. In their longitudinal study of 655 students spanning the transition from elementary to middle school in America, Ryan and Shim (2012) argued that help seeking from peers develops during early adolescence, has implications for academic achievement and is sensitive to changes in students' perceptions of their teacher and the classroom environment over time. In addition, Patrick and colleagues (2007) demonstrated the power of student belief about the classroom environment. Their research revealed that students' perceptions of their classroom environment affected their academic and social beliefs about themselves. These beliefs were also demonstrated to affect students' behavioural and cognitive engagement within the classroom, and ultimately their academic achievement. Students who are encouraged by their friends and supported by their teachers are more likely to be risk-takers within the classroom. Indeed, it has been claimed that students who are encouraged by optimistic teachers and by positive expectations from other adults are more likely to be positively engaged with school, peers, and schoolwork (Martin, 2005). Conversely, students who are more disengaged from schooling because of social and relationship factors or because of a lack of teacher support are also more at risk of academic failure (Hamm & Faircloth, 2005).

Recent research in the area of classroom environments has contended that when there is an influence by class teachers on the students' academic outcomes, the gender of the teacher is less likely to be the critical factor; it is the pedagogy of that teacher that is the critical factor in the students' learning (Hattie, 2009; Marsh et al., 2008). Marsh and colleagues (2008) examined whether male teachers were better able to motivate male

students and if female teachers were better able to motivate female students. Their results indicated that there was little or no support for these assertions. Further, it was demonstrated that female teachers were often more beneficial for male students, but at a lesser level than the benefits received by females from female teachers. In short, these findings identified that the gender of the teacher is not a key issue in the determination of students' academic learning and achievement. It is more likely that it is the pedagogical considerations that are more salient to the students' learning, but this is not the only factor and so student learning outcomes are likely to be a the product of a combination of psychological, social, setting, and learning variables (Hattie, 2009).

Friendship and Academic Achievement

The preceding review provided an examination of the differences in friendship patterns and nuances between boys and girls. To expand, these ideas are now explored with respect to the extent to which friendship and gender have an impact on classroom-based outcomes of students (Wentzel, Donlan, & Morrison, 2012). Given that early adolescence is a time when students in school tend to invest more time with their contemporaries, it is pertinent to outline the importance of friendship as it relates to academic achievement. It is important to note that early adolescence is seen as a period of time typically characterised by a decline in scholastic motivation and academic performance (Gherasim et al., 2013). Links between the quality of social relationships in school and academic outcomes are well established in the literature (Flook et al., 2005; Fraser, 1998; Hamm & Faircloth, 2005; McLeod et al, 2012). Having friends has been positively related to results and test scores of students in middle school (Kim & Kim, 2013; Wentzel et al., 2004; Wentzel et al., 2012), students' academic efficacy (Purdie, Carroll, & Roche, 2004), students' academic orientation and school performance (Flook et al., 2005) and students' tertiary expectations and attendance (Cherng et al., 2013).

Recent research by Kiefer and Ryan (2008) examined the ways in which social dominance goals interacted with academic achievement. By examining the social goals for student engagement and achievement at school, the authors concluded that those students who pursued social dominance interaction goals displayed maladaptive forms of classroom engagement and subsequently had lower academic achievement than those students whose social goals involved intimacy with fellow students. In short, those students who were interested in interacting with and helping their peers were better off academically than those students who had the goal of dominating classroom social interactions. The desire to work with classmates, to collaborate, and to help others had a positive academic outcome for those students. This is supported by the work of Wentzel and colleagues (2012) who argued that a central role of educators is to find ways to facilitate and foster the development of positive adolescent social relationships in order to maximise students' academic achievement.

Most of these studies have focused on academic achievement and friendship patterns in general curriculum classrooms, but there is some evidence to suggest that mathematics classrooms may show a different pattern between achievement and friendships (Hamm & Faircloth, 2005; Sakiz et al., 2012; Swenson & Strough, 2008). This may be, in part, due to mathematics achievement being developed in a cumulative way, with individual differences being magnified over time (Gherasim et al., 2013).

Hamm and Faircloth (2005) have suggested that mathematics classrooms can present a variety of challenges to the early adolescent and that students can fail to develop a sense of social belonging due to the individualistic nature of some mathematics classrooms. Hamm and Faircloth claimed that, due to the nature of traditional mathematics instruction, teachers typically did not create mathematics classrooms permeated by a strong sense of belonging, social relationship, or commitment among students. It has been also suggested that the competitive learning environments of post-primary school could explain why students do not

necessarily support each other in class as they do not wish to be outperformed by peers (Gherasim et al., 2013). Similarly, in their study of students in sixth grade mathematics classrooms, Patrick, Turner, Meyer, and Midgley (2003) argued that teachers needed to create a sense of belonging and commitment from the students by: (a) encouraging a positive social learning environment; (b) enhancing the relationships formed within the classroom; and (c) establishing a supportive interaction within the classroom. Patrick et al. (2003) also noted that mathematics teachers who were focused on the socio-emotional well-being of their students had students who were more engaged in mathematics and learning. The importance of teacher support is further emphasised by the work of Gherasim and colleagues (2013), who found in their study of seventh grade mathematics classrooms that teacher support was a significant predictor of mathematics outcomes, whereas peer support had no effect on mathematics achievement outcomes. Supporting this notion of teacher support, Sakiz and colleagues (2012) explored the importance of perceived teacher affective support in a self-report survey administered to 317 seventh- and eighth-grade students in five US middle schools. Students who reported higher levels of teacher affective support were also likely to report greater sense of belonging, higher academic enjoyment, lower academic hopelessness, and greater academic self-efficacy, all of which were associated with greater academic effort. The role of teacher support is clearly an important point to consider particularly in light of evidence to suggest that middle school students describe mathematics as less valuable, and report investing less effort and persistence, particularly in the first year of middle school mathematics (Pajares & Graham, 1999; Sakiz et al., 2012).

Swenson and Strough (2008) explored the importance of friendship, gender and relationship quality within the classroom setting by examining peer partners. Contrary to their predictions, the friendship of peer partners was of little consequence for the achievement of a collaborative task within the classroom setting. Gender was only found to

have marginal influence on the differences in student achievement. Relationship quality between the collaboration partners was shown to be important; particularly the level to which adolescents perceived conflict within their relationship.

The issue of the friendship of peer partners is important to examine in terms of the gender of the friends. From the literature it is understood that: (a) working groups in schools are predominantly dyadic; (b) they are usually same-sex working pairs; (c) the pairs are usually of similar ability; and (d) there are degrees of variation in academic achievement both individually and collectively as a result of working together (Kutnick & Kington, 2005; Wang & Eccles, 2012).

Kutnick and Kington (2005) sought to explore the potential benefits of friends working together in a classroom context by ascertaining if friendship might lead to activities promoting cognitive development. Their study found that friendship, per se, was not a direct and ‘fool-proof’ way to academic achievement and cognitive development. Instead, the authors point to the pattern of gender relations as a possible window into academic achievement. An examination of the values of the genders within their friendship pairings revealed that boys rarely discussed schoolwork inside or outside of school with their friends, whereas girls discussed school activities (Kutnick & Kington, 2005). The authors urged caution for classroom teachers in the design of classroom activities such that the placement of learners next to their friends may not necessarily provide the optimum conditions for academic engagement and achievement. Indeed, there appears to be more complex processes at play in the social and academic life of the classroom.

A number of explanations have been put forward to explain why the social relationships of adolescents are tied to academic achievement. One such explanation involves observational learning (Barry & Wentzel, 2006; Flynn & Whiten, 2013; Wentzel et al., 2004). This involves the adolescents learning via the observation and modeling of

behaviour of their friends (Hay & Simmons, 2011). The more time adolescents are with their friends, the more opportunity they have to learn new strategies and gain new information and content that may be relevant to the mastering of academic tasks. Further, there is the opportunity for friends to reinforce each other for academic and study behaviours that are like their own (Barry & Wentzel, 2006; Masten et al., 2012). If academic skills are demonstrated within the peer mentoring network, such as how to complete a content task or find specific information, there is an increased likelihood of positive academic outcomes for the student (Wentzel & Caldwell, 1997). This is especially so when the friendship network values academic achievement and is motivated to achieve (Wentzel & Asher, 1995; Wentzel et al., 2004). This explanation is further supported by the contention that friendship mentoring contributes to academic achievement. Guay, Boivin, and Hodges (1999) argued that the behaviour of the other students in the classroom is often an important influence on in-class learning, students' time on task, and the students' ability to interact in a positive way with the teacher. Of particular concern to educators then, is the evidence that students who are prone to problematic social interactions in adolescence are also prone to poorer academic outcomes when compared with their peers (Lynch et al., 2013).

Flook et al. (2005) examined the links between students' friendship acceptance in the classroom and their academic performance, academic self-concept, and internalising coping symptoms. The three year longitudinal study involved 247 fourth-year students from three schools in a large metropolitan area of America. The study added to contemporary understanding of the importance of social relationships in schools in three significant ways. First, the results supported previous literature linking problematic social relationships with academic performance. Second, the results were supported by both teacher and student reports, suggesting that findings were not due to methodological issues. Finally, the authors identified that social problems within the classroom affected students' self-concept, mental

health and ultimately, school performance. Flook and colleagues (2005) found that academic self-concept and internalising symptoms can act as mediating factors between classroom social interactions and academic performance. In addition, their research reported the reciprocal nature of the relationship between internalising symptoms and a lack of peer acceptance. Indeed, Flook et al. (2005) argued, “The effects of a lack of peer acceptance were pervasive, extending beyond poor concurrent performance to predict decrements in academic performance over time” (p. 325).

Rationale for the Present Study

The present study is an extension of an earlier pilot study by Simmons and Hay (2010). This pilot study examined the interactions between friendship patterns, school achievement, coping skills, self-concept and the classroom learning environment for 182 early adolescents with a mean age of 13 years 5 months. From a research design perspective, the present study extends the Simmons and Hay (2010) study by: (a) offering a wider cross-section of adolescents and locations than the pilot study; (b) reporting data from an Australian classroom perspective; (c) considering multiple measures as part of a mixed-method design; and (d) examining the role that the values students have impact upon their academic and mental health outcomes.

From a design perspective, Flook and colleagues’ (2005) study provided an important framework to investigate friendships within a school context. In particular, their study validated two methodological issues. First, researchers need to use multiple measures, such as self-concept, social relationship, coping, friendship links, along with academic achievement scores in research studies aiming to investigate the relationship between achievement and social relationships. Second, the individual students’ position on the friendship continuum, from low to high, influences the students’ academic outcomes (Wentzel et al., 2012). Of particular concern to this study is the extension of Flook et al.’s

(2005) research to explore the possibility that early adolescent students with low friendship will also have low coping scores, low self-concept scores, and poorer academic outcomes, when compared with their classmates with higher friendship. Further, the present study explores if friendship is predictive of academic achievement. This is a logical extension of the Flook et al.'s (2005) research, but there is evidence from the research by Hay (2000) who demonstrated that some adolescents can have high friendship relations and high self-concept scores, but low academic achievement scores. Flook's (2005) research certainly provides important direction for adolescent research, but more research is needed to validate their findings. This is supported by Estell and Perdue (2013) who contended that there are relatively few studies regarding the role of peer support in educational outcomes.

Flook's (2005) North American finding may also not be relevant in the Australian classroom context. This setting has strived to provide a learning community to cater for all students, with educators focused on the social environments within the classroom to maximise student outcomes (McNeely et al., 2002; Pendergast, 2005; Simmons & Hay, 2010). It could be that most students in a middle years setting have sound friendships patterns because of the focus on social relationships with the design of the middle school program, and so there may be little, if any, relationship between friendship and achievement.

Allen and Fraser's (2002) research on classroom environments has established that there is a strong relationship between students' perceptions of their classroom environment and their academic achievement; that is, if students feel supported and valued in the classroom, their academic achievement increases. Therefore, based on Allen and Fraser's research, middle school students' perceptions of their classroom environment may be the critical issue and students' friendship patterns may play little or no influence on academic achievement. Sinclair and Fraser (2002) also identified that gender impacted on students' perception of their classroom environment and that gender needs to be considered when

investigating this domain. Certainly, based on issues arising from the work of Flook et al. (2005), Fyffe, Hay, and Palmer (2004), Pendergast (2005), Sinclair and Fraser (2002), and Simmons and Hay (2010), the interaction between friendship patterns and quality, adjustment, self-concept, coping skills, personal values, classroom environment and academic achievement for students in the middle years of schooling is still unresolved, as is an understanding of how these variables collectively interact with gender and academic achievement.

In addition, Hattie's (2009) meta-analyses of factors influencing students' academic achievement support the notion that these factors are multi-dimensional and at times interactive. While Hattie's research would contend that all of the following variables: friendship patterns, adjustment, self-concept, coping skills, personal values, and classroom environment have the potential to have an influence on students' academic achievement, his research method involved meta-analyses and reported on the effect size of individual factors as identified in the research literature on students' achievement. There exists a gap in the literature, however, as there are very few studies that have investigated the psychosocial influence of friendship patterns, adjustment, self-concept, coping skills, personal values, and classroom environment on achievement as one study. Hattie's work tended to focus on the effect size of individual factors examined in isolation. The present study extends Hattie's work from a focus on individual factors explored in isolation and, in doing so, adds to the body of work exploring the role that multiple factors have to play in influencing student academic achievement.

While academic achievement as a general outcome measure has been identified in much of the previous research, the notion that psychosocial variables operate differently for English achievement to mathematics achievement has, to date, not been well investigated. One of the few studies to have made this investigation is that of Hamm and Faircloth (2005)

who reported that mathematics classrooms were less influenced by social relationships than other curriculum subjects, such as English. Research needs to still investigate both English and mathematics to identify if the subject domain influences the interaction between friendship patterns and quality, adjustment, self-concept, coping skills, personal values, classroom environment and academic achievement.

Gender has been a background variable in a number of the research studies that have investigated psychosocial factors influencing students' learning (Hattie, 2009). If gender is a direct or indirect factor along with friendship patterns, adjustment, self-concept, coping skills, personal values, and classroom environment that can have an influence of students' achievement, then investigating these factors in single gender schools compared to co-educational schools is one method to better identify the impact of gender on students' achievement. In terms of which developmental age is the optimal time to look at the interactions between students' friendship patterns, adjustment, self-concept, coping skills, personal values, classroom environment, and gender, there is evidence that early adolescence and middle schooling period is a challenging but critical period for both boys and girls (Hay & Ashman, 2012), and, as such is worthy of more research that has the potential to better understand this period and the influence of psychosocial factors. Thus, the setting for this planned research is the early adolescent period for students in both same gender and mixed gender schools, with the outcome measure being mathematics and English achievement and the influence of friendship patterns, adjustment, self-concept, coping skills, personal values, and classroom environment as relevant psychosocial variables.

Research Questions

1. What is the influence of friendship patterns on middle school students' mathematics performance?

2. What is the influence of friendship patterns on middle school students' English performance?
3. What is the validity of the Children's Value Profile for use with adolescent students?
4. What are the interaction influences between friendship and academic achievement in mathematics and English in the middle school years?
5. What are gender differences on the measures of friendship patterns and quality, adjustment, self-concept, coping skills, personal values, classroom environment and academic achievement?
6. What are the quantitative and qualitative differences between high and low friendship groups?

Chapter Summary

In this chapter, previous research relevant to the present study has been reviewed. The chapter commenced with an examination of the importance of a focus on adolescence as it relates to modern educational discourse. The importance of friendship in adolescence was outlined and the importance of friendship attachment was explained. The ways in which friendship contributes to social-emotional adjustment and academic achievement was explored with a particular emphasis on the middle years of schooling. This exploration included studies which substantiate the need for professionals working with adolescents to be aware of the implications of friendship on academic and other measures of well-being. The present chapter demonstrated that the values that young people place on their friendship and academic achievement offers an opportunity to explore further as there is a particular gap in the literature. Finally, a sound rationale for the current research design was provided which was a natural extension of the pilot study by undertaken by Simmons and Hay (2010).

Chapter 3: Method

Ethical Approval

Ethics approval to conduct the study was obtained from the University of Tasmania Human Research and Ethics Committee (see Appendix A). Informed consent was also obtained from the Heads of the independent schools involved. Permission was obtained from the Tasmanian Department of Education to undertake the research in the government school (see Appendix B). Students had written parental/guardian consent to participate before the initial data collection phase and they were advised that they could withdraw from the study at any time without penalty (see Appendix C).

School and Participant Recruitment

Three non-government schools and one government school were selected for inclusion on the basis of an affirmative response to the prospect of conducting the study. The schools represented both metropolitan and provincial locations in two states of Australia (see Table 1). One school was located in Charters Towers, Queensland, one was from Launceston, Tasmania, and two were from Hobart, Tasmania. Three of the four schools consisted of both day and boarding students. Two schools were co-educational; two schools were single sex schools, consisting of one girls' school and one boys' school. To control for sampling error, students were selectively sampled on the basis of school year levels, school type (government and independent), and socio-economic background.

The Index of Community Socio-Educational Advantage (ICSEA), as seen in Table 1, indicated that the schools represented a cluster of fairly similar schools in terms of socio-economic background. The ICSEA is based on a mean score of 1000 and a standard deviation of 100 and was developed by the Australian Curriculum, Assessment, and Reporting Authority (ACARA) as a scale to represent student advantage (ACARA, 2011). Permission to be involved in the study was sought from parents of students in the relevant

year levels, with teachers distributing and collating the permission forms. In total, there were 266 students for whom consent was obtained to participate in the study across the school Year levels of 6, 7, 8, and 9.

Table 1

Key Information Regarding Schools Participating in the Study

	School 1	School 2	School 3	School 4
School Sector	Non-government	Non-government	Non-government	Government
Year Range	K - 12	K - 12	K - 12	7 - 10
Total Enrolments	373	999	1004	907
Location	Provincial	Metropolitan	Provincial	Metropolitan
ICSEA Value	977	1123	1077	993

Participants

The 266 participants ranged in age from 11 to 15 years (140-189 months), with an average age of 13.5 years (*SD* of 1 year and 1 month) ($M = 162$ months, $SD = 12.1$). Of these 266 participants, 59% ($N = 157$) were male. The students were drawn from four schools, two of which were single sex schools and the other two co-educational schools. In total, 67% of the students were drawn from the two single gender schools. As illustrated in Table 2, of the 266 students, the largest percentage of participants was from a metropolitan, single-sex boys' school (41%) and the smallest percentage from a provincial, co-educational school (9%).

Table 2

Proportion of Sample Drawn from each School

School	Participants	Proportion of Sample (%)
1	24	9
2	110	41
3	63	24
4	69	26

The participants were absent from school between 0 and 45 days (in that year), with an average of 10 days ($SD = 8.6$). In terms of friendship, the students were asked to nominate others as friends. The number of nominations ranged from 0-19, with an average of 4.8 nominations ($= 4.3$). As illustrated in Table 3, participants were fairly evenly drawn from four different year levels, with the largest percentage (39%) from Year 7 and the smallest percentages from Years 8 (20%) and 9 (17%).

Table 3

Participants by Year Level

Year Level	Number of Participants	Percentage of Sample
6	63	23.68
7	104	39.10
8	53	19.92
9	46	17.29

Instruments

Seven instruments were administered in the first data collection phase, covering key areas of student well-being and social interactions. Students were surveyed using multiple instruments in order to explore, in a quantitative fashion, the broad range of variables being examined. Students were given a questionnaire booklet which included the following measures:

Friendship nomination form. This nomination form asked the students to nominate their best friend within their school year level (see Appendix E). It also asked them to name other friends within their year level. Space was provided for the students to write the names of up to ten other friends. The researcher did not determine whether or not friendships were reciprocated as it was determined that the subjective experience of friendship in adolescence was a key focus of the present study. Although there are some researchers who maintain that a reciprocal best friendship is fundamental to the friendship experienced, other researchers (Ojanen, Stratman, Card, & Little, 2013; Simpkins et al., 2006; Zabatany et al., 2004) noted that students who receive non-reciprocated nominations can also be considered as friends by those who nominated them (Veronneau & Dishion, 2011). Further, there is emerging work to advocate that the reciprocal nomination method might not accurately encapsulate the totality of an individual's social experience (Pijl, Koster, Hannink, & Stratingh, 2011). In this study, 264 students completed the friendship nomination form.

Friendship Quality Scale (FQS). The FQS is a 23 item instrument used to assess the quality of students' relationships with their best friend (FQS; Bukowski et al., 1994; e.g., "My friend and I argue a lot"). In the original sample used to investigate the structure of the FQS, five factors were identified relating to students' self-reported friendship quality: companionship, help-support, closeness, security and conflict (Bukowski et al., 1994). All students were instructed to complete the measure based on their friendship with their best friend from their year level at school (see Appendix F). Items were scored on a 5-point Likert scale 1 (*Not at all true*) to 5 (*Really true*). Internal reliability using Cronbach's alpha coefficients for each subscale has been reported to be between 0.71 and 0.86 (Bukowski et al., 1994). In this study, 261 students completed the FQS.

Strengths and Difficulties Questionnaire (SDQ). The Strengths and Difficulties Questionnaire (SDQ) was developed by Goodman (1997) and is a brief behavioural screening

tool for children and young people (SDQ; Goodman, 1997; e.g., “Other people my age generally like me”). The SDQ consists of 25 items where participants are asked to respond to on a three-point Likert scale from 1 (*not true*), 2 (*somewhat true*) or 3 (*certainly true*). The SDQ provides sub-scale information across five core areas: Conduct Problems, Inattention-Hyperactivity, Emotional Symptoms, Peer Problems and Prosocial Behaviour (see Appendix G). The SDQ is a modification of the Rutter Parent Questionnaire (Rutter, 1967), which was revised to include questions relating to positive behaviours being displayed by the individual (Hill & Hughes, 2007). The SDQ is available in self-report form and also as a proxy report measure (Van Roy, Veenstra, & Clench-Aas, 2008). The questionnaire for self-completion by 11 to 16 years was used in the present study, and 262 students completed the SDQ in the present study.

Coping Strategy Indicator – Short Form (CSI-S). The short form of the Coping Strategy Indicator (CSI-S) was developed by Ellis (CSI-S; 2004; e.g., “I ask my friends to support me”) as a brief version of the original Coping Strategy Indicator (CSI) (Amirkhan, 1990). In the original sample used to investigate the structure of the CSI-S, three factors were identified relating to students’ self-reported levels of coping, namely: Problem Solving, Seeking Support and Avoidance behaviours (see Appendix H). Previous research has found factor analytic support for the three strategies of coping, as well as good reliability and construct validity for the original long 33-item version of the CSI (Amirkhan, 1990). Ellis (2004) isolated 15 of the original 33 items in the CSI-S and found them to have good internal reliability (coefficient alphas ranged from 0.80 to 0.89, with a median alpha = 0.84). A total of 258 students completed the CSI-S in the present study.

Self-Description Questionnaire II – Short Form (SDQ II-S). The SDQII-S (Ellis, 2004; Marsh, Ellis, Parada, Richards & Heubeck, 2005) was used to measure student self-concept across a range of indices (see Appendix I). It is a brief version of the SDQII (Marsh,

1990a; Marsh, 1990b) and is designed for use with young people between the ages of 12 to 18 years. The short form retains the original self-concept factors which total eleven factors. These factors are General Self, Mathematics, Verbal, General School, Physical Abilities, Physical Appearance, Relations with Same-Sex Peers, and Relations with Opposite-Sex Peers, Relations with Parents, Honesty, and Emotional Stability (SDQII-S; Ellis, 2004; e.g., “Work in English classes is easy for me”). Items were scored on a 6-point Likert scale, from 1 (*False*) to 6 (*True*). Ellis (2004) found that reliabilities for the SDQII-S were consistently high for the original eleven SDQII factors, with Cronbach’s alphas ranging from 0.80 to 0.89 ($M = 0.84$). A multiple group confirmatory factor analysis demonstrated that the factor structure based on responses to the short form were invariant with the factor structure based on responses to the original 102-item SDQII (Ellis, 2004). A sample of 255 students completed the SDQ-II(S) in the present study.

Children’s Values Profile (CVP). The Children’s Values Profile (CVP) was used as an assessment tool to measure student values across a range of dimensions (CVP; Fyffe, 2006; e.g., “I join in with other children”). In the original sample used to investigate the factor structure of the CVP, upper primary school children were the cohort (see Appendix J). Seven factors were identified relating to student’s self-reported values, namely: behaviour, academic progress, self-concept, social, emotional intelligence, world view, and school climate (Fyffe et al., 2004). Responses were scored on a 5-point Likert scale from 1 (*False*) to 5 (*True*). While acknowledging the theoretical development of the measure, the present study was the first study to extend the measure to use in an adolescent population to explore whether the CVP factor structure is the same for older students. Internal reliability using a Cronbach’s alpha coefficient for the measure has been reported at 0.94, indicating a high level of internal consistency (Fyffe, 2006). In this study, 255 students completed the CVP..

What is Happening in this Classroom? Scale (WIHIC). The What is Happening in This Class? Scale was utilised to measure student perceptions of the classroom environment (WIHIC; Fraser, McRobbie, & Fisher, 1996; e.g., “The teacher talks with me”). The WIHIC assesses seven factors, namely; Students’ Cohesiveness, Teacher Support, Involvement, Investigation, Task Orientation, Cooperation and Equity (see Appendix K). This scale has been used in a variety of classroom settings in Australia, America, United Arab Emirates, Singapore and elsewhere and has been demonstrated to have internal consistency reliability estimates from 0.87 to 0.97 (Aldridge, Fraser, & Huang, 1999; Taylor & Fraser, 2013). In the present study, 242 students completed the WIHIC.

Procedure

The study was conducted in two phases. During the first phase of the research, participating students were administered the research booklet containing the seven measures. The students completed the research booklet in their regular classes with supervision from a representative from the University of Tasmania or a teacher. Students had the opportunity to ask questions about the study and were thanked for their participation.

The second phase of the research involved individual semi-structured interviews of students. Semi-structured interviews were deliberately chosen in the research design for the present study as a way of providing rich descriptions of the social relationships of young people. Signed consent was obtained from students who met the criteria for being identified as either high or low in friendship nominations (see Appendix D). To assist with determining the criteria for high or low friendship nominations, a procedure was used to tabulate the number of friendship nominations the students received by their year level peers. An aggregate score was calculated for each student in the study by year level and school. Using this aggregate score, four students who received the highest aggregate score from each year level in their school were invited to be interviewed. Four students who received the lowest

aggregate scores in each year level in their school were also invited to be interviewed.

Names of students to be interviewed were drawn randomly in the case of there being more than four students in each year level receiving either high or low nominations. A total of 37 students were interviewed (see Table 4 below). The interviews were undertaken by the author or a representative from the University of Tasmania. The interviews were semi-structured and explored qualitative aspects of students' relationship with their nominated best friend (see Appendix L).

Table 4

Interview Schedule of Low Friendship and High Friendship students

School	High Friendship Nominations	Low Friendship Nominations
1	2	6
2	6	6
3	6	5
4	2	4

Analysis Strategy

Quantitative Analysis

All the statistical analyses were conducted using the Statistical Package for the Social Sciences (SPSS)20 for Apple MacIntosh while qualitative text analysis was undertaken using Leximancer Version 4.0. Analytic procedures comprised two major segments: Descriptive and Inferential analyses. Descriptive analyses involved the use of tables and graphs together with text-based comments. This included analyses of items that comprised the various scales of interest. The association between items and scales was examined by using exploratory factor analysis (Principal Components Analyses with a Varimax rotation). The rationale for this was that while these scales were reported in the literature as valid and reliable, some scales in the present study differed from previously published versions, and moreover,

differed in important ways. That is, the clustering of items in scales made a lot of sense in the context of the population of students that the samples drew on, however, may not be representative of the current population. This was particularly the case for the Children's Value Profile.

Inferential analyses involved the use of scale scores as outcomes and demographic responses as predictive variables. Multivariate analysis of variance (MANOVA) was used to examine the extent to which common sets of subscales varied in relation to specified predictors, with the assumption that univariate outcomes were only examined if multivariate outcomes proved to be statistically significant. In cases where parametric assumptions were not met, appropriate nonparametric methods were substituted for the univariate phase of these analyses (primarily, the Kruskal-Wallis H test).

As a final step in the quantitative analytic process, structural equation modeling (SEM) was used to examine the precursors of mathematics and English grades. The purpose of the use of SEM was with the aim of identifying a parsimonious model consisting of significant predictors of mathematics and English grades. Stepwise regressions were undertaken prior to SEM with the aim of identifying a subset of items that significantly predicted the outcomes of interest. Scale scores plus demographic variables that were identified as predictive in the stepwise regression process were entered into an initial SEM. The initial model was then supplemented by adding all possible bidirectional and unidirectional pathways. This saturated model was then pared down to exclude non-significant associations and predictors.

Qualitative Analysis

Analysis of the qualitative interviews was undertaken using Leximancer version 4.0 software. The purpose of qualitative analysis was to look for emergent themes in student verbal responses to semi-structured interviews relating to their school and friendship

experiences. Leximancer proceeds by generating a thesaurus based on the actual language used in the transcripts. It does so by using a clumping algorithm that examines successive sections (usually changes in speaker between interviewer and respondent) for the repeated use of particular concepts. Having identified a baseline of concepts, it then identifies the thematic concepts (akin to archetypal concepts) and yields a final list of thematic and subsidiary concepts that are not visible in the output figure as such. The resulting set of visible concepts is arranged in a number of ways including as a ranked concept list, as a concept map, and a thematic ranked summary list. The two-dimensional concept map is particularly useful because it provides a spatial map of the distances between concepts such that highly related concepts cluster together and those that are highly distinct are placed at opposite ends of the spatial map. The spatial map itself is somewhat like a scatterplot with each concept plotted on an X and Y axis. Those concepts that are most central to the analysis take the form of thematic circles. These thematic circles encompass smaller or larger numbers of related concepts depending on whether the thematic concepts are set at a scale of 0 to 100% of the concept map, with a default setting of 30%. As part of the output, linkages between concepts can be examined in terms of the relevant portion of the transcript, thus providing a very detailed view of specific associations. Generally speaking, the software can be used to examine the interview data for themes and trends across both high and low friendships groups. This examination included the nuanced ways in which the friendship groups differed and provided a more robust examination of the data than might be the case were one to depend on either purely manual methods (including Nvivo) or quantitative analytic methods.

Chapter 4: Results

This chapter presents the results of the study across both the quantitative and qualitative analyses. The initial presentation of the results in the chapter involves the quantitative aspects participants were examined with in regards to their self-reported ratings of the psychological indices, their self-reported ratings of classroom environment, and academic achievement results. An alpha level of 0.05 was chosen for the detection of statistically significant relationships and Bonferroni adjustments were applied in the analysis of the data. The second aspect to be reported on in this chapter involves the results of the qualitative interview data which were obtained via analysis using Leximancer software.

Relationships Between Variables

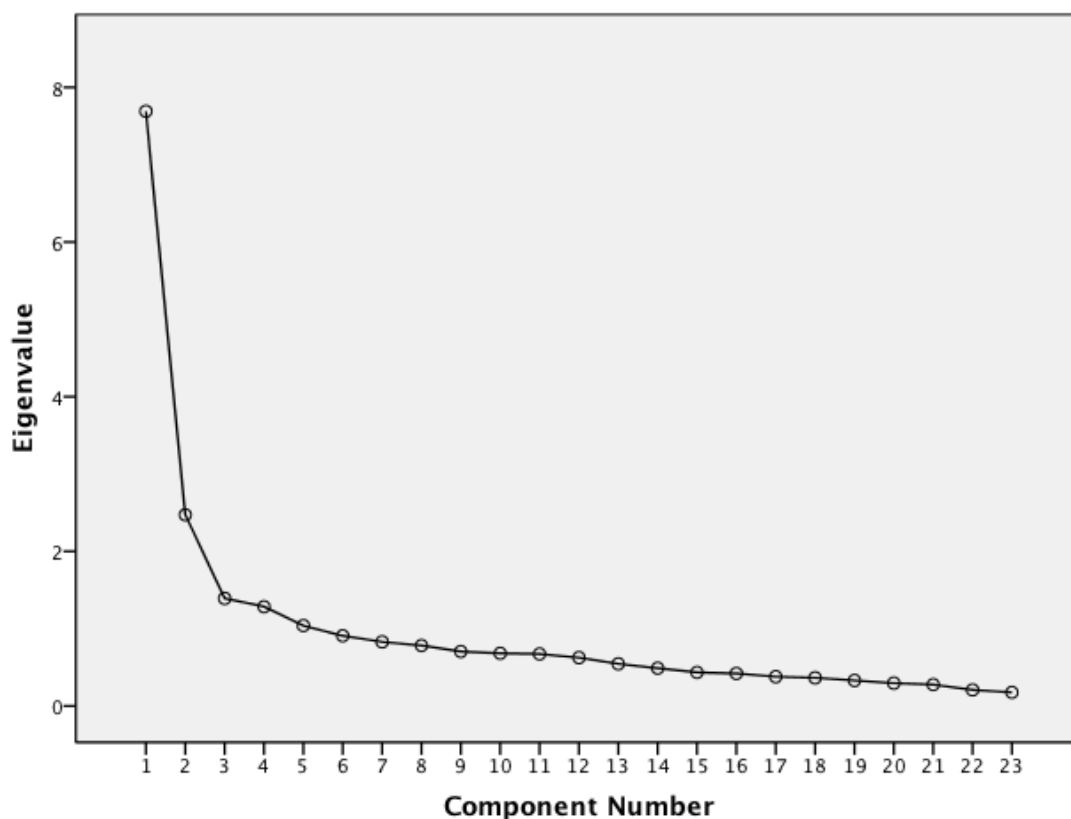
End of year academic results demonstrated that the students who were high performers in mathematics were also likely to be high performers in English ($r = 0.66$, $p < .01$). In addition, there was a low, but statistically significant correlation, that provided some support to the argument that students with higher academic achievement received more friendship nominations (mathematics $r = 0.13$, $p < .01$; English $r = 0.15$, $p < .01$). Investigating this further in terms of the students' results, it was identified that 80% of the students in the study achieved results in the high range which would explain the low correlation between friendship nominations and academic achievement. In this study, academic achievement was not shown to be a strong discriminatory variable.

Items and Scales

Students were asked a series of questions about friendship (23 items), their strengths (33 items), coping strategies (15 items), self-concept (51 items), values (100 items), and classroom life (56 items). In the following sections, the positivity with which participants respond to each of these subsets of items, and the extent to which responses group into intelligible factors are reported.

Psychometric Properties of the Friendship Quality Scale (FQS). A Principal Components Analysis (PCA) using an orthogonal rotation with factor loadings of less than 0.30 suppressed in the final pattern matrix is included in Table 7. An examination of the Eigenvalues in the scree plot demonstrates that this is a multi-dimensional test and it suggests there are at least four factors with an Eigenvalue greater than 1 (see Figure 1). The Cronbach's Alphas for the scale are included in Table 7, along with the Pattern Matrix. The coefficients suggest that each identified factor demonstrated reasonable internal consistency.

Figure 1. Scree plot for 23 friendship items with Eigenvalues plotted against the items



Following the examination of the factors via the scree plot, an exploratory factor analysis was conducted which identified four distinct factors in the pattern matrix (see Table 6). These four factors are identified as: Caring, Forgiveness, Companionship and Annoyance. The four-component solution below explained 64% of the variance and produced a Keiser Meyer Olkin (KMO) value of 0.785, supporting the notion that the factor structure is both intelligible and meaningful.

Table 6

Friendship Quality Questionnaire Factor Structure Based on N = 261 Lower Secondary School Students

Factor No.	Factor Name
1	Caring
2	Forgiveness
3	Companionship
4	Annoyance

Table 7

Pattern Matrix and Cronbach's Alphas of the Friendship Quality Questionnaire Profile Structure Based on N = 261 Lower Secondary School Students

Question	C1	C2	C3	C4
My friend can bug me or annoy me even though I ask him/her not to	0.69			
My friend and I disagree about many things	0.73			
I can get into fights with my friend	0.80			
My friend and I can argue a lot	0.83			
My friend and I go to each other's houses after school and on weekends			0.75	
My friend thinks of fun things for us to do together			0.77	
My friend and I spend all our free time together			0.77	
If my friend had to move away, I would miss him/her.		0.56		
If other kids were bothering me, my friend would help me		0.75		
If I forgot my lunch or needed a little money, my friend would loan it to me		0.76		
My friend would help me if I needed it		0.82		
If my friend or I do something that bothers the other one of us, we can make up easily				0.86
If my friend and I have a fight or argument, we can say 'I'm sorry' and everything will be alright.				0.82
Cronbach's Alpha	0.77	0.75	0.69	0.73

Gender Differences in Friendship Quality. As indicated in Table 8, statistically significant differences were found between the genders on two of the friendship quality factors. Female students were more likely than males to describe their relationship quality with their best friend as higher in aspects of caring interactions, $F(1, 247) = 37.699, p < .001$, and in relation to the positive aspect of companionship that such a friendship brings, $F(1, 247) = 3.887, p < .05$.

Table 8

Gender Differences in Friendship Quality

Item	Gender					
	Male		Females		<i>F</i>	Sig.
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Friends as Caring	3.93	0.06	4.57	0.08	37.69	$P < .01$
Friends as Companions	2.99	0.07	3.22	0.10	3.88	$P < .05$

Note. *M* = Mean, *SD* = Standard Deviation.

Psychometric properties of the Strengths and Difficulties Questionnaire (SDQ).

A Principal Components Analysis (PCA) using an orthogonal rotation with factor loadings of less than 0.30 suppressed in the final pattern matrix is displayed in Table 10. An examination of the Eigenvalues in the scree plot demonstrates that this is a multi-dimensional test and it suggests there are at least two factors with an Eigenvalue greater than 2 (see Figure 2).

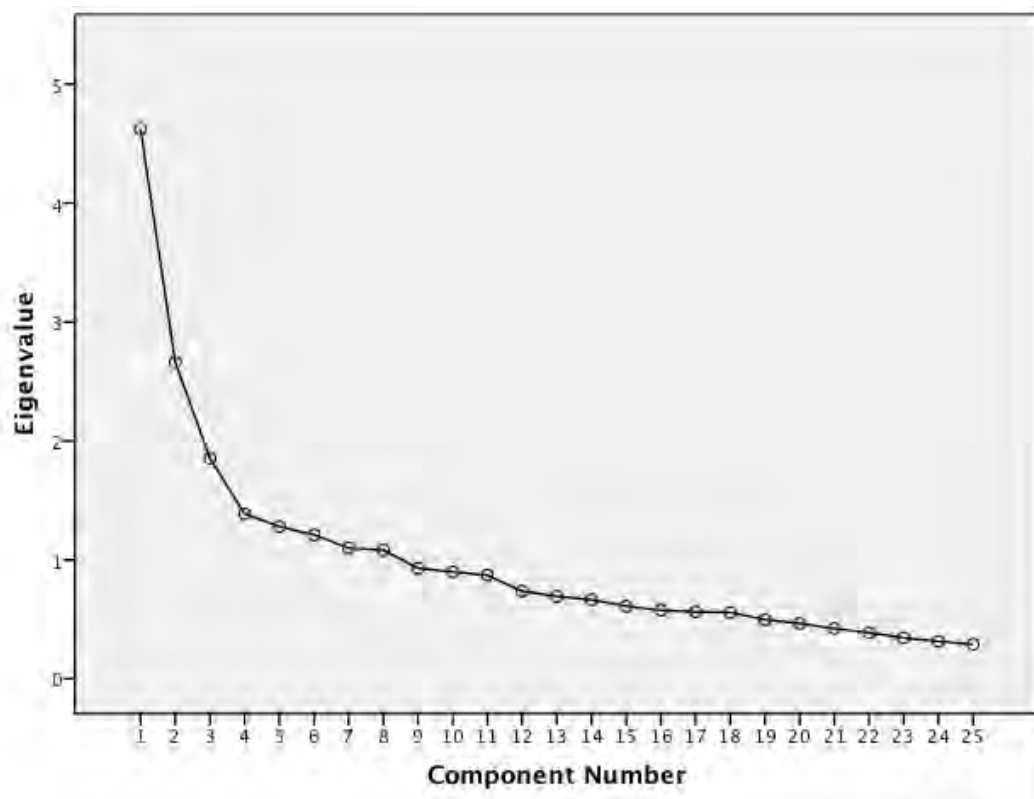


Figure 2. Scree plot for 25 strength items with Eigenvalues plotted against the items

Following the examination of the factors via the scree plot, an exploratory factor analysis was conducted. This step confirmed two distinct factors as identified in the pattern matrix. These two factors were identified as Positive Focus and Negative Focus (see Table 9). The two-component solution explained 38% of the variance and produced a KMO of 0.627 supporting that the factor structure is both intelligible and meaningful. Table 10 displays the two-factor pattern matrix for students' strengths and difficulties.

Table 9

Strengths and Difficulties Profile Factor Structure Based on N = 262 Lower Secondary School Students

Factor No.	Factor Name
1	Positive Focus
2	Negative Focus

Table 10

*Pattern Matrix and Cronbach's Alphas of the Strengths and Difficulties Questionnaire**Profile Factor Structure Based on N = 262 Lower Secondary Students*

Rotated Component Matrix	C1	C2
I am constantly fidgeting or squirming	0.77	
I am restless, cannot stay still for long	0.76	
I fight a lot. I can make other people do what I want	0.40	
I am nervous in new situations, I easily lose confidence	0.38	
I finish the work I am doing. My attention is good		
I am helpful if someone is hurt, upset or feeling ill		0.72
I try to be nice to other people. I care about their feelings		0.69
I usually share with others, for example, CD's, games, food.		0.61
I have one good friend or more		0.28
Cronbach's Alpha values	0.56*	0.51

*Strength 25 reversed

Gender differences in strengths and difficulties. As indicated in Table 11, the only significant difference between genders was that female students described their perception of their mental well-being in more positive light compared to male students, $F(1, 244) = 39.094$, $p < .001$.

Table 11

Significant Gender differences in Strengths and Difficulties

Item	Gender				<i>F</i>	Sig.
	Male		Females			
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Positive Strengths	2.50	0.07	2.76	0.04	39.09	<i>p</i> < .001

Note. *M* = Mean, *SD* = Standard Deviation.**Psychometric properties of the Coping Strategy Indicator – Short Form (CSI-S).**

A Principal Components Analysis (PCA) using an orthogonal rotation was conducted on the items of the Coping Strategy Indicator. Factor loadings of less than 0.30 were suppressed in

the final pattern matrix. An examination of the Eigenvalues in the scree plot demonstrates that this is a multi-dimensional test and it suggests there are at least three factors with an Eigenvalue greater than 2 (see Figure 3).

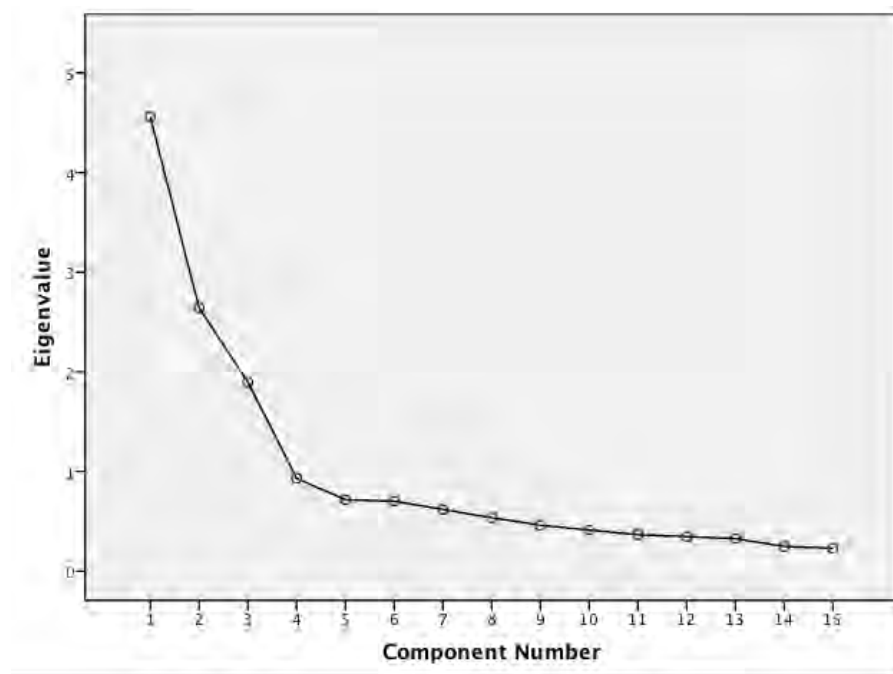


Figure 3. Scree plot for 15 coping strategy items with Eigenvalues plotted against the items

Following the examination of the factors via the scree plot, an exploratory factor analysis was conducted (see Table 12). This analysis confirmed three distinct factors to be identified in the pattern matrix, identified as: Seeking Support, Problem Solving and Avoidance. The three component solution below (Table 13) explained 61% of the variance and produced a KMO of 0.844, supporting the notion that the factor structure is both intelligible and meaningful.

Table 12

Coping Strategy Indicator Profile Factor Structure Based on N = 258 Lower Secondary School Students

Factor No.	Factor Name
1	Seeking support
2	Problem solving
3	Avoidance

Table 13

Pattern Matrix and Cronbach's Alphas of the Coping Strategy Indicator – Short Form Profile Structure Based in N = 258 Lower Secondary

School Students

Question	C1	C2	C3
I go to a friend to help me feel better	0.88		
I ask my friends to support me	0.87		
I tell my fears and worries to a friend	0.86		
I go to a friend for advice on how to solve the problem	0.80		
I make a plan of action about what I will do		0.85	
I develop a plan about how to solve the problem before doing anything		0.79	
I think about what needs to be done		0.78	
I set goals for myself to deal with the problem		0.71	
I try different ways to solve the problem until I find one that works	0.30	0.61	
I avoid the problem by staying away from other people			0.80
I avoid the problem by wishing that people would leave me alone			0.78
I avoid the problem by spending more time alone			0.70
I avoid the problem by sleeping more than usual			0.66
I avoid the problem by pretending that there is no problem			0.62
I avoid the problem by watching television more than usual			0.47
Cronbach's Alpha values	0.90	0.84	0.76

Gender differences in coping. As indicated in Table 14 below, statistically significant differences were found between the genders. Female students were more likely than males to describe their coping skills in terms of seeking help from their friends, $F(1, 240) = 69.370, p < .001$ and by using problem solving strategies, $F(1, 240) = 14.595, p < .001$.

Table 14

Gender Differences in Coping

Item	Gender				<i>F</i>	Sig.
	Male		Females			
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Seeking Support	2.84	0.10	4.17	0.13	69.37	<i>p</i> <.01
Problem Solving	3.07	0.09	3.63	0.12	14.59	<i>p</i> <.01

Note. *M* = Mean, *SD* = Standard Deviation.

Psychometric properties of the Self- Description Questionnaire -II (Short Version) (SDQ II- S). A Principal Components Analysis (PCA) utilising an orthogonal rotation was conducted and factor loadings of less than 0.30 were suppressed in the final pattern matrix. An examination of the Eigenvalues in the scree plot demonstrated that this is a multi-dimensional test and it suggests there are at least 10 factors with an Eigenvalue greater than 1 (Figure 4). Following the examination of the factors via the scree plot, an exploratory factor analysis was conducted. This exploratory factor analysis confirmed eight distinct factors as identified in the pattern matrix. These eight factors are identified as: Verbal Self-Concept, Physical appearance self-concept, Mathematics self-concept, Honesty self-concept, Physical Abilities Self-Concept, Relationship with Parents Self-Concept, Emotional Stability Self-Concept and Relations with Same-Sex Peers Self-Concept (see Table 15). The component solution below explained 72% of the variance and produced a KMO of 0.805, supporting the notion that the factor structure is both intelligible and meaningful (see Table 16).

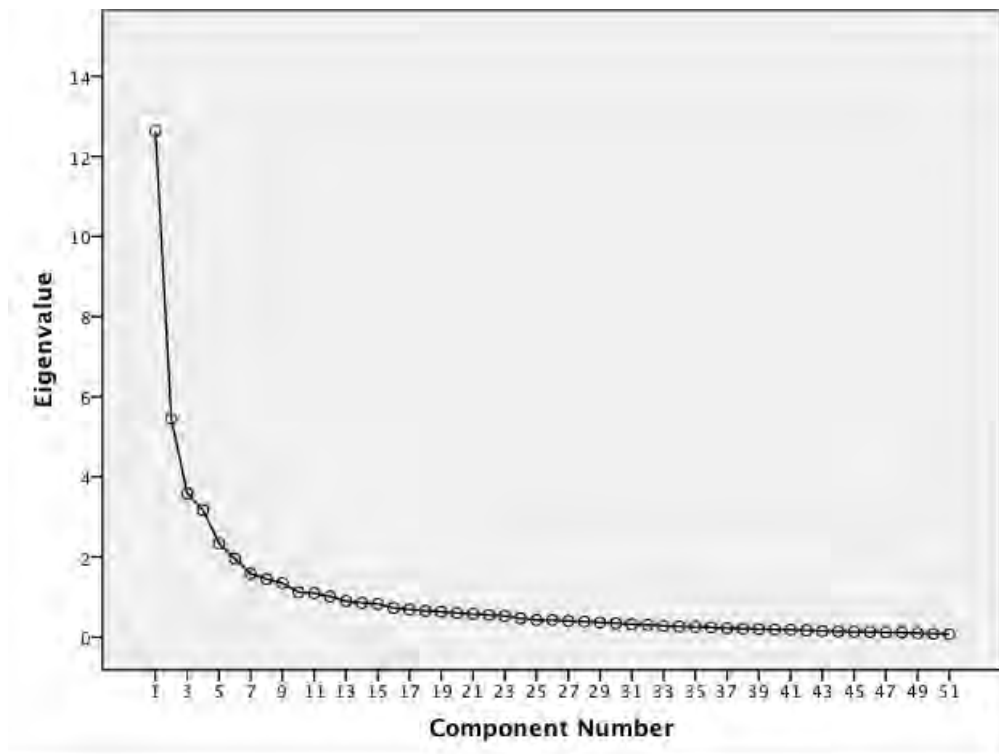


Figure 4. Scree plot for 51 SDQ II items with Eigen values plotted against the items

Table 15

Self-Description Questionnaire-II (Short Version) Profile Factor Structure Based on N = 255

Lower Secondary School Students

Component	Domain
1	Verbal Self-Concept
2	Physical Appearance Self-Concept
3	Mathematics Self-Concept
4	Honesty Self-Concept
5	Physical Abilities Self-Concept
6	Relationship with Parents Self-Concept
7	Emotional Stability Self-Concept
8	Relations with Same-Sex Peers Self-Concept

Table 16

Pattern Matrix of the SDQ-II (S) Factor Structure and Cronbach's Alphas Based on N =255 Lower Secondary School Students

Question	C1	C2	C3	C4	C5	C6	C7	C8
English is one of my best subjects	0.89							
Work in English is easy for me	0.85							
I am hopeless in English classes	0.84							
I get good marks in English	0.84							
I learn things quickly in English classes	0.84							
I am good looking		0.88						
I have a nice looking face		0.86						
Other people think I am good looking		0.79						
I have a good-looking body		0.77						
I have always done well in mathematics			0.90					
I get good marks in mathematics			0.89					
Mathematics is one of my best subjects			0.88					
I do badly in tests in mathematics			-0.76					
I often tell lies				0.82				
I sometimes cheat				0.77				
I always tell the truth				-0.72				
I sometimes tell lies to stay out of trouble				0.72				
I am honest				-0.70				
I enjoy things like sport, gym, and dance					0.88			
I am good at things like sports, gym & dance					0.85			
I am better than most of my friends at things like sports, gym & dance					0.81			
I am awkward at sports, gym, and dance					-0.71			
My parents understand me						0.77		
My parents treat me fairly						0.76		
I get along well with my parents						0.76		
I do not like my parents very much						-0.74		
I worry more than I need to							0.81	
I worry about a lot of things							0.81	
I am a nervous person							0.75	
Not many people of my own sex like me								0.80
I make friends easily with own sex								-0.70
It is difficult to make friends with own sex								0.66
Cronbach's Alpha values*	.91	.89	.88	.83	.84	.80	.78	.72

Gender differences in self-concept. Male students had a higher self-concept in regard to mathematics than female students, $F(1, 198) = 5.25, p < .05$. Female students were more likely to view themselves as honest than males in the present study $F(1, 198) = 5.45, p < .05$. In addition, female students were more likely to report that higher levels of anxiety when compared with the males in the study $F(1, 198) = 7.94, p < .01$.

Psychometric properties of the Children's Value Profile (CVP). A Principal Components Analysis (PCA) with an orthogonal rotation was conducted with factor loadings of less than 0.30 were suppressed in the final pattern matrix. An examination of the Eigenvalues in the scree plot demonstrated that this is a multi-dimensional test and it suggests there are at least 10 factors with an Eigenvalue greater than 2 (see Figure 5).

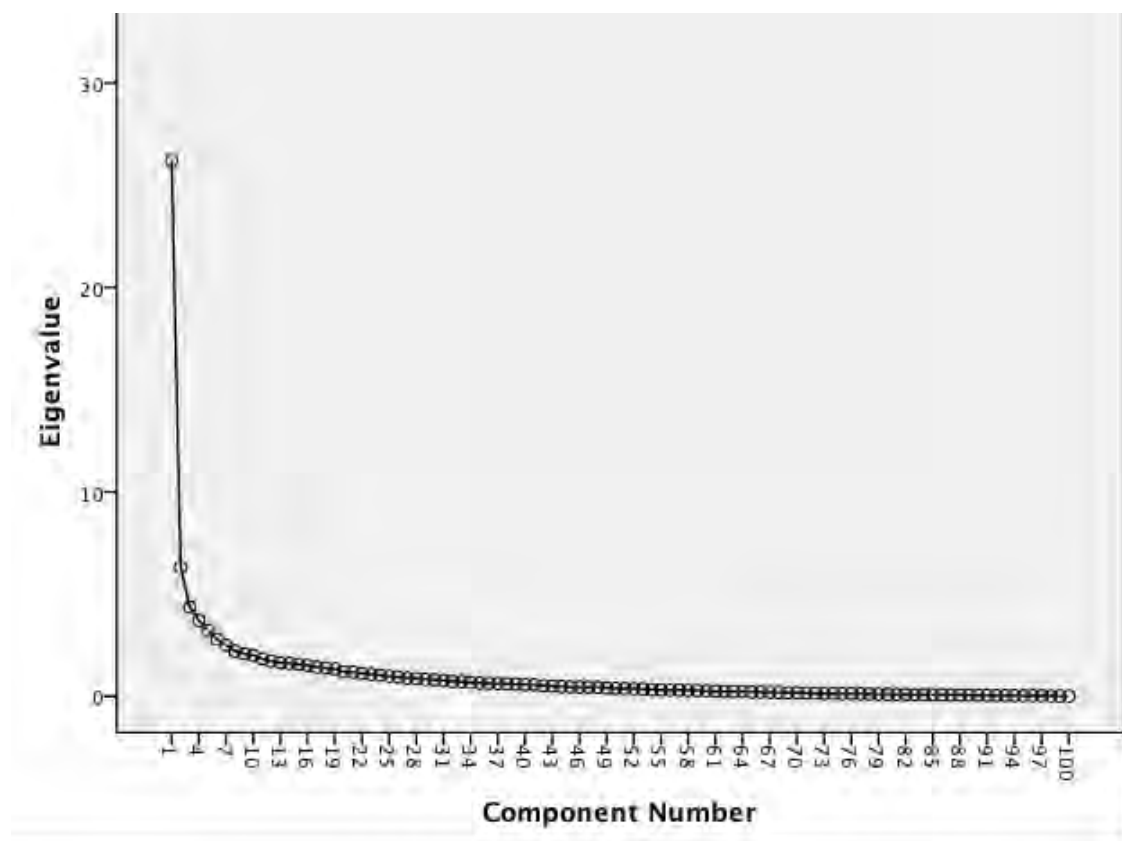


Figure 5. Scree plot for 100 Values items with Eigen values plotted against the items

Following the examination of the factors via the scree plot, an exploratory factor analysis was conducted (see Table 17). This exploratory factor analysis confirmed 12

distinct factors as identified in the pattern matrix. These 12 factors were identified as Behaviour (Playing by rules / self-regulation), World View and Emotional Intelligence, School Climate (caring and feeling valued), Self-Concept (parents), Self-Concept (reading), Emotional Intelligence (self-awareness), Self-Concept (maths), Self-Expression (expressive abilities), Self-Concept (ability); Behaviour (playing by the rules); Self-Expression (health values), Having Experienced Bullying, Emotional Intelligence (motivation), and Leadership. The 12-component solution below explained 75% of the variance and produced a KMO of 0.813 supporting the notion that the factor structure is both intelligible and meaningful (see Table 18).

Table 17

Children's Values Profile Factor Structure Based on N =255 Lower Secondary School Students

Factor No.	Factor Name
1	Behaviour (Playing by rules / Self-regulation)
2	World View (Intolerance; Justice); Emotional Intelligence (Social competence)
3	School Climate (caring and feeling valued)
4	Self-concept (parents)
5	Self-concept (reading)
6	Emotional Intelligence (Self-awareness)
7	Self-concept (maths)
8	Self-expression (Expressive abilities)
9	Self-concept (ability); Behaviour (playing by the rules); Self-expression (health values)
10	Having experiences bullying
11	Emotional Intelligence (Motivation)
12	Leadership

Table 18

Pattern Matrix of the Children's Values Profile Factor Structure and Cronbach's Alphas Based on N =255 Lower Secondary School Students

Question	C1	C2	C3	C4	C5	C6	C7	C8	C9	C10	C11	C12
I wait my turn when playing games	0.80											
I listen when others are speaking	0.77											
I follow class rules	0.74											
I think cheating is wrong	0.71											
I play fair	0.66											
I like to share my things with others at school	0.57											
I feel for others who are worse off than me		0.79										
I get upset when I see someone from another country being made fun of		0.78										
I care for people who look different		0.72										
I stick up for others even if they are not friends		0.66										
In my school teachers care for children			0.81									
In my school other adults care for children			0.81									
People help me at this school			0.64									
I feel part of this school			0.57	0.30								
My father is proud of me				0.91								
I get on well with my father				0.86								
My mother is proud of me				0.78								
I am good at reading					0.89							
I am good at reading					0.87							
Reading is interesting					0.79							
I know when I am sad						0.89						
I know when I am happy						0.81						
I know when I am nervous						0.77						
I am good at Maths							0.89					
Maths is interesting							0.83					
I am good at Maths							0.81					
Expressing myself in music is important to me								0.78				

Expressing myself in art is important to me										0.77									
Dance is important to me										0.75									
Sport is important to me											0.80								
Can throw ball a long way											0.78								
Am a good sport											0.73								
Some children pick on me at school												0.93							
Get teased by some children												0.91							
I have goals for the future													0.83						
I look forward to growing up													0.77						
Like to be in control of a group														0.83					
A leader in my classroom															0.67				
Cronbach's Alpha	0.84	0.80	0.87	0.84	0.87	0.86	0.86	0.77	0.74	0.88	0.69	0.40							

Gender differences in values. As indicated in Table 19, statistically significant differences were found between the genders across a number of adolescent values. In particular, female students were more likely than males to describe themselves as placing importance on the values of rules ($F(1, 198) = 6.550, p < .05$), compassion ($F(1, 198) = 13.080, p < .001$) and artistic expression ($F(1, 198) = 11.857, p < .001$). In comparison, males were more likely to place importance on the value of sports participation ($F(1, 198) = 10.684, p < .001$) and were likely to have experience with receiving bullying in the school context ($F(1, 198) = 10.420, p < .001$).

Table 19

Gender Differences on Values Measure

Item	Gender				<i>F</i>	Sig.
	Male		Female			
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Rules	4.08	0.07	4.36	0.90	6.55	<i>p</i> <.05
Compassion	3.97	0.07	4.40	0.90	13.08	<i>p</i> <.001
Artistic Expression	2.82	0.11	4.12	0.08	11.85	<i>p</i> <.001
Sports Participation	4.12	0.08	3.68	0.11	10.68	<i>p</i> <.001
Having experienced bullying	2.57	0.12	1.95	0.15	10.42	<i>p</i> <.001

Psychometric properties of the What is Happening in this Classroom? Scale

(WIHIC). A Principal Components Analysis (PCA) using an orthogonal rotation was conducted, and factor loadings of less than 0.30 were suppressed in the final pattern matrix. An examination of the Eigenvalues in the scree plot demonstrates that this is a multi-dimensional test and it suggests there are at least five factors with an Eigenvalue greater than 2 (see Figure 6). Following the examination of the factors via the scree plot, an exploratory

factor analysis was conducted (see Table 20). This analysis confirmed five distinct factors as identified in the pattern matrix, identified as: Teacher equity, Task Orientation, Investigation, Students' Cohesiveness and Students' Involvement. The five component solution below explained 68% of the variance and produced a KMO of 0.91 supporting the notion that the factor structure is both intelligible and meaningful (see Table 21).

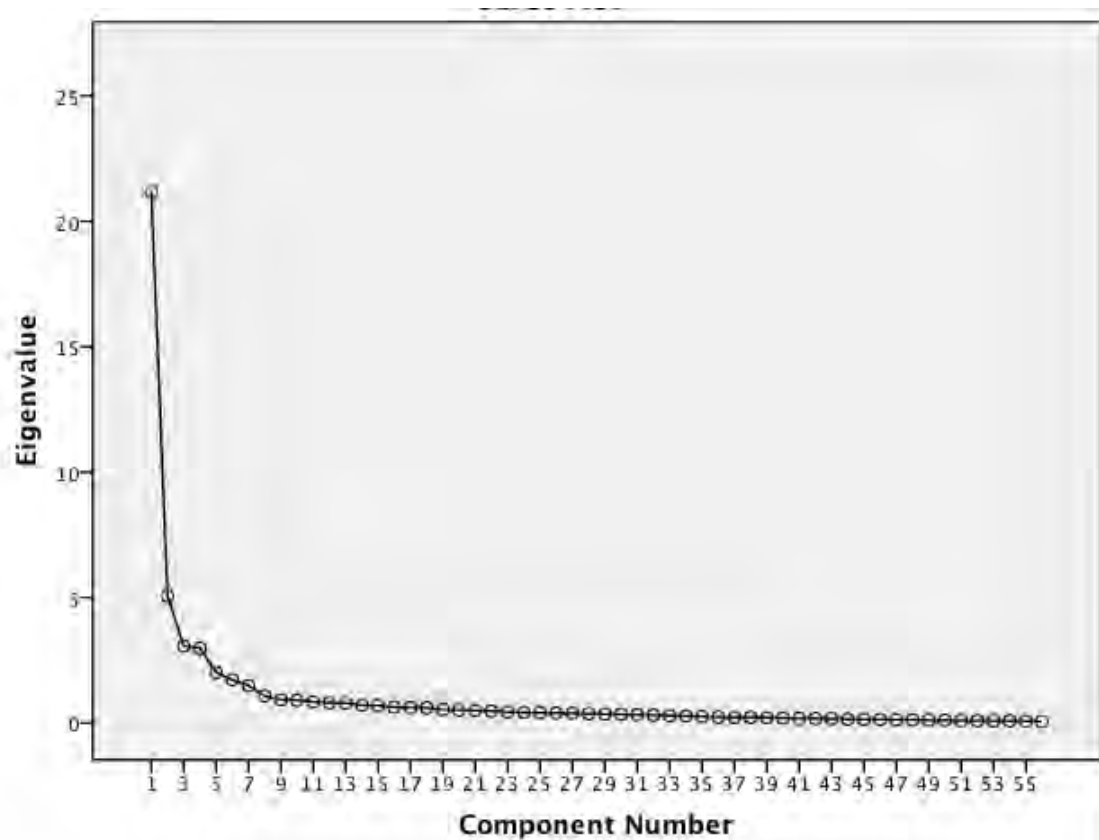


Figure 6. Scree plot for 50 Classroom practice items with Eigen values plotted against the items

Table 20

What is Happening in this Classroom? Factor Structure Based on N =242 Lower Secondary School Students

Factor No.	Factor Name
1	Teacher equity
2	Task orientation
3	Investigation
4	Students' cohesiveness
5	Students' involvement

Table 21

Pattern Matrix of the What is Happening in this Classroom? Factor Structure and Cronbach's Alphas based on N =242 lower secondary school students

Question	C1	C2	C3	C4	C5
I receive the same encouragement from the teacher as other students do	0.86				
I get the same encouragement from the teacher as other students do	0.85				
I am treated the same as other students in this class	0.83				
I get the same amount of help from the teacher as do other students	0.82				
The teacher gives as much attention to my questions as to other students' questions	0.79				
I have the same amount of say in this class as other students	0.77				
My work receives as much praise as other students' work	0.73				
I pay attention during this class		0.80			
I know what I am trying to accomplish in this class		0.77			
I try to understand the work in this class		0.77			
I'm ready to start class on time		0.73			
I do as much as I set out to do		0.72			
I know how much work I have to do		0.68			
Getting a certain amount of work done is important to me		0.61			
I find out answers to questions by doing investigations			0.85		
I carry out investigations to answer the teacher's questions			0.84		
I solve problems by using information obtained from my own investigations			0.79		
I explain the meaning of statements, diagrams and graphs			0.78		
I carry out investigations to answer questions which puzzle me.			0.74		
Members of class are my friends				0.80	
I make friendships among students in this class				0.73	
I know other students in this class				0.72	
I work well with other class members				0.72	
I am asked to explain how I solve problems					0.72
I discuss ideas in this class					0.66
I work with other students on projects in this class				0.30	0.55
Cronbach's Alpha value	.93	.86	.91	.84	.69

Gender differences in perception of classroom environment. As indicated in Table 22, a statistically significant difference was found between male and female students with respect to the level of focus their classroom teacher fostered, $F(1, 199) = 4.963, p < .05$. In this case, female students were more likely to report that their classroom teacher fostered a focus on the classwork within the classroom learning environment.

Table 22

Gender Differences in Perception of Classroom Environment

Item	Gender				<i>F</i>	Sig.
	Male		Females			
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Focus	4.10	0.06	4.31	0.8	4.96	<i>p</i> <.05

Quantitative differences between low and high friendship groups. One-way ANOVA revealed there were statistically significant differences between the low and high friendship groups across a number of scale items in the present study. These are outlined in Table 23 below. Groups differed on their views of friends as companions with the high friendship group reporting more companionship, $F(1,31) = 4.77, p < .05$. Low and high friendship groups also differed on their levels of physical self-concept, $F(1,32) = 7.11, p < .05$. Self-concept for how students deal with same-sex friendships was also significantly different between low and high friendship groups with high friendship students reporting greater levels of ability to interact with same-sex peers, $F(1,30) = 5.24, p < .05$. Finally, students in the high friendship group were more likely to report higher levels of classroom friendship interactions than those of lower friendship status, $F(1,27) = 8.81, p < .01$.

Table 23

Quantitative Differences between Low and High Friendship Groups

Item	Friendship Group				<i>F</i>	Sig.
	Low		High			
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>		
Friends as Companions	2.90	0.73	3.46	0.73	4.77	<i>p</i> <. <i>05</i>
SDQ Physical ability	3.84	1.32	4.92	0.98	7.11	<i>p</i> <. <i>05</i>
SDQ Same-sex friends	4.82	1.37	5.69	0.61	5.24	<i>p</i> <. <i>05</i>
Classroom Friendship	4.11	0.78	4.77	0.30	8.81	<i>p</i> <. <i>01</i>

Note. *M* = Mean, *SD* = Standard Deviation.

Structural Equation Modelling

In the sections below, results are reported from two analytic methods, the first utilising stepwise linear regressions, and the second utilising path analysis procedures based on Structural Equation Modelling (SEM) as outlined by Byrne (2001).

Linear Regressions. Linear regression assumes that the outcome variable is equal interval or approximates an equal interval in terms of its psychometric properties (Marill, 2004). It also assumes that predictor variables are either nominal (e.g., gender: 0 = male, 1=female) or equal interval (e.g., number of days absent, year level, scale scores). Stepwise regression includes predictor variables in and order based on the extent to which they share variance with the outcome variable (Schmitt & Ployhart, 1999). Stepwise regression operates by generating a series of models in which the most influential predictors are entered first, and then other predictors dependent on whether they also share significant amounts of the variance with the outcome variable. Predictors that do not share significant amounts of variance are excluded from the model.

A series of stepwise linear regressions were used to examine the influence of demography, friendship nominations, friendship strategies, coping strategies, strengths, SDQ results, values and classroom strategies on end of year results for mathematics and English. These analyses were undertaken separately for each of the tests. To enable a parsimonious model to be developed in each of the curriculum areas of mathematics and English, the critical pathways were examined. Mathematics, English and friendship nominations from analyses of interest (demographic predictors and scale score predictors) were grouped and distilled. For each of the tests, all of the scale score and demographic items were then regressed, initially on mathematics achievement.

In relation to demographic predictors, Table 24 below demonstrates that female students achieved less than male students ($\beta = -0.286$), that students who took more days off from school ($\beta = -0.020$) obtained lower mathematics results, and those students in single gender schools achieved better mathematics outcomes ($\beta = 0.492$). Those students who received more friendship nominations were more likely achieve better mathematics outcomes ($\beta = 0.033$).

For the scale score predictors, it was determined that for mathematics achievement, the best predictor from 51 self-concept scale items was mathematics proficiency ($\beta = 0.40$). From the 33 scale items of the Strengths and Difficulties Questionnaire, levels of negative strengths was predictive of poorer performance in mathematics ($\beta = -0.611$). From the 100 scale items exploring student values, positive numeracy values were predictive of better results in mathematics ($\beta = 0.398$). From the 56 scale items exploring classroom environment, greater involvement in problem solving activities within their classroom was predictive of higher mathematics achievement levels ($\beta = 0.172$). Finally, from the 15 scale items exploring coping, avoidance oriented coping strategies were predictive of lower

mathematics results at the end of the academic year ($\beta = -0.167$). These results are outlined in Table 24 below.

Table 24

Significant Predictors of the Mathematics Results at Year's End (sorted by type of IV)

Mathematics	Coefficients	<i>B</i>	Beta	<i>t</i>	<i>Sig.</i>
Demographic variables	Female students	-0.286	-0.148	-2.393	$p < .05$
	Days off school in year	-0.020	-0.175	-2.743	$p < .01$
	Single gender schools	0.492	0.244	3.359	$p < .001$
	School Year level	-0.144	-0.153	-2.165	$p < .05$
Friendship nomination	Nominations received	0.033	0.147	2.337	$p < .05$
Strengths and Difficulties	Negative focus	-0.611	-0.265	-4.192	$p < .001$
Self-Concept	Self-concept (Mathematics)	0.402	0.575	9.740	$p < .001$
Children's Values	Values (Numeracy)	0.398	0.476	7.482	$p < .001$
Classroom Environment	Problem solving	0.172	0.189	2.639	$p < .01$
Coping	Coping (by avoidance)	-0.167	-0.158	-2.42	$p < .05$

Stepwise multiple regressions were also employed to analyse the relationships between predictor variables and English achievement. In relation to demographic predictors, Table 25 demonstrates that students from co-educational schools obtain lower scores for English at the end of the academic year ($\beta = -0.83$). Higher school year levels ($\beta = -0.20$) and fewer days off school ($\beta = -0.01$) predicted better English achievement. Higher numbers of friendship nominations were also predictive of English achievement levels at end of the academic year ($\beta = 0.03$). A number of scale scores contributed to predict English achievement. From the 33 scale items of the Strengths and Difficulties Questionnaire, higher levels of negative strengths were predictive of poorer achievement in English ($\beta = -0.37$). The best predictors of English achievement from the 51 self-concept scale items were mathematics self-concept ($\beta = 0.24$) and English self-concept ($\beta = 0.18$). From the 100 scale items exploring student values, positive numeracy values were also predictive of positive

results in English ($\beta = 0.23$) as were positive literacy values ($\beta = 0.15$). In comparison, students who nominated experiencing bullying as part of the values measure were less likely to achieve favourable results in English at the end of the academic year ($\beta = -0.17$). From the 56 scale items exploring classroom environment, it was determined that students who reported a greater focus on work in class were more likely to achieve higher results for English at the end of the academic year ($\beta = 0.31$). Finally, from the 15 scale items exploring coping, it was demonstrated that students who coped by problem solving were more likely to achieve higher results in English ($\beta = 0.11$), whereas those students who coped by avoidance were likely to obtain lower levels of achievement for English at the end of the academic year ($\beta = -0.13$).

Table 25

Significant Predictors of the English Results at Year's End (sorted by type of IV)

English	Coefficients	B	Beta	t	Sig.
Demographic variables	Co-educational schools	-0.83	-0.45	-6.48	$p < .001$
	Year level	-0.20	-0.23	-3.36	$p < .001$
	Days off school in year	-0.01	-0.13	-2.09	$p < .05$
Strengths & Difficulties	Friendship nominations	0.03	0.13	1.99	$p < .05$
	Negative focus	-0.37	-0.18	-2.77	$p < .01$
Self-Concept	Self-Concept (Mathematics)	0.24	0.38	5.93	$p < .001$
	Self-Concept (English)	0.18	0.27	4.30	$p < .001$
	Numeracy	0.23	0.30	4.28	$p < .001$
Children's Values	Has experienced bullying	-0.17	-0.24	-3.71	$p < .001$
	Literacy	0.15	0.18	2.53	$p < .01$
Classroom Environment	Work focus	0.31	0.25	3.57	$p < .001$
Coping	Coping (by problem solving)	0.11	0.14	2.12	$p < .05$
	Coping (by avoidance)	-0.13	-0.14	-2.06	$p < .05$

Structural Equation Measurement Model.

A structural equation model of the total data set was undertaken to investigate the impact of various factors on students' academic achievement. Structural equation models are designed to simultaneously investigate a range of variables and their impact on the target variable (Byrne, 2001). In this analysis, an initial investigation was conducted using regression analysis to identify the significant pathways that impacted on students' English and mathematics achievement. Each measure was analysed in turn until a parsimonious set of 15 variables that impacted on either English or mathematics achievement was isolated. These core values were examined in further detail to ensure a higher probability of success in the overall model. In building the measurement model, the set of 15 variables was analysed using a full structural equation model in AMOS.6 (Arbuckle, 2005) to investigate these factors simultaneously to identify the significant pathways and the overall goodness of fit of this set of variables on students' achievement. The 15 variables were logically organised to produce a rational path diagram which is displayed in Figure 7. In interpreting Figure 7, the 15 variables under investigation are outlined over in Table 26.

Table 26

Explanation of Variables

SEM Model Label	Variable Explanation
Class Problem Solving	Classroom Environment (Problem solving)
Coping by avoidance	Coping (by avoidance)
Coping by problem solving	Coping (by problem solving)
Values Bullying	Children's Values (has experienced bullying)
Dual gender schools	Coeducational schools
SDQ Maths Proficiency	Self-Concept (Mathematics)
SDQ English Proficiency	Self-Concept (English)
Values Numeracy	Children's Values (Numeracy)
Values Literacy	Children's Values (Literacy)
Negative Strengths	Strength and Difficulties (Negative focus)
Class Work Focus	Classroom Environment (Work focus)
Maths end of year grade	Mathematics (end of year result)
English end of year grade	English (end of year result)
Year level	School Year Level
Days off school in year	Days absent

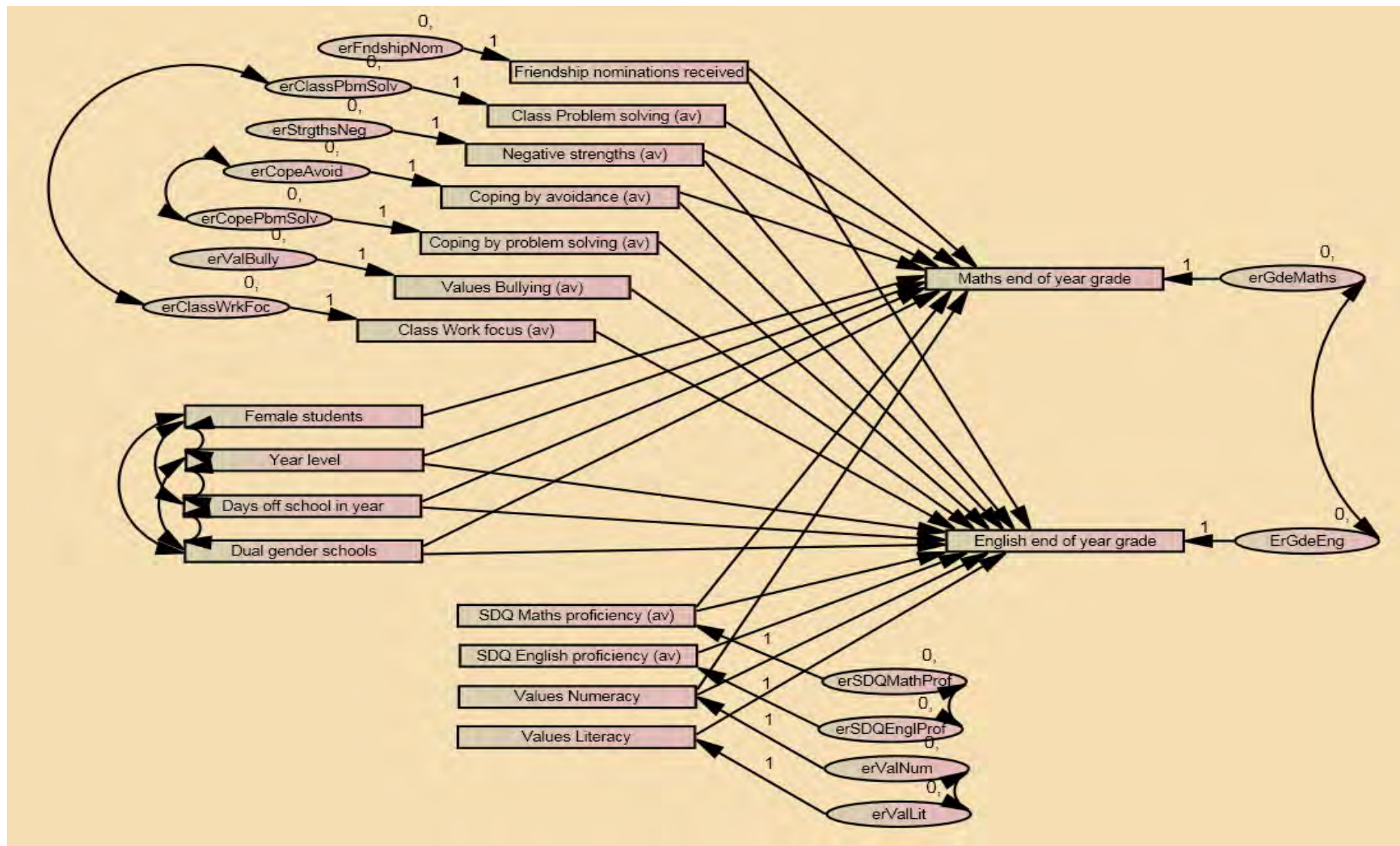


Figure 7. Input measurement model based on regression outcomes plus all significant associations between predictor variables

The input model (see Figure 7) was investigated and it was demonstrated that some of the 15 pathways were not significant in influencing students' mathematics and English achievement. Those non-significant variables were taken out and the analysis re-run. This improved the overall goodness of fit of the model to the data and identified the critical variables that impacted on students' achievement. The final model demonstrated seven pathways were significant and these are displayed in Figure 8. The 15 variables under investigation in this measurement model are outlined in Table 27. The pathways are:

1. Friendship nominations received
2. School year level
3. Female gender
4. Co-educational schools
5. Self-Concept (Mathematics)
6. Self-Concept (English)
7. Children's Values (Numeracy)

Table 27

Explanation of Variables

SEM Model Label	Variable Explanation
Class Problem Solving	Classroom Environment (Problem solving)
Coping by avoidance	Coping (by avoidance)
Coping by problem solving	Coping (by problem solving)
Values Bullying	Children's Values (has experienced bullying)
Dual gender schools	Coeducational schools
SDQ Maths Proficiency	Self-Concept (Mathematics)
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Values Numeracy	Children's Values (Numeracy)
Values Literacy	Children's Values (Literacy)
Negative Strengths	Strength and Difficulties (Negative focus)
Class Work Focus	Classroom Environment (Work focus)
Maths end of year grade	Mathematics (end of year result)
English end of year grade	English (end of year result)
Year level	School Year Level
Days off school in year	Days absent

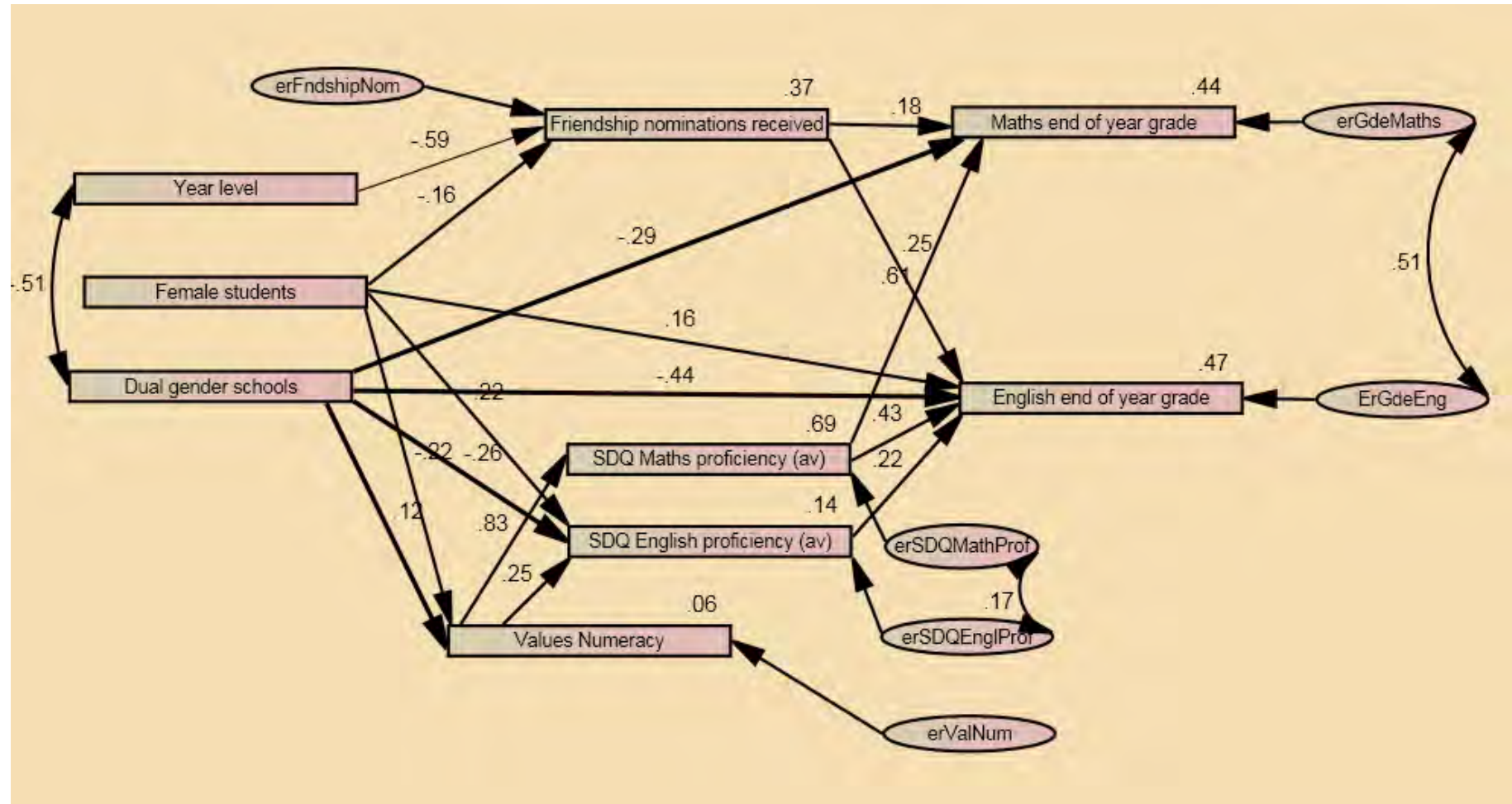


Figure 8. Final revision of the measurement model based on significant unidirectional and bidirectional pathways

Fit measures. As stated above, not only were all unidirectional and bidirectional pathways between variables significant at or below the .05 level but the overall Chi square statistic for the model was acceptable, $\chi^2(17) = 16.506$, *ns*. A non-significant Chi Square value is regarded as an important measure of interest in terms of judging the quality of the model. Based on the obtained Chi Square and DF values, Chi Square/*df* approximated 1 (.971), a value regarded also as very acceptable. The obtained estimates of goodness of fit (GFI = 0.99; AGFI = 0.91; NFI = 0.98; RFI = 0.96; CFI = 1.0) were all in the .91-1.0 range, which is regarded as very acceptable (Kaplan, 2000). Beyond that, the RMSEA of .000 is indicative of a very close fit of the model in relation to the degrees of freedom.

The only respect in which this model does not meet model fit expectations was with regard to the root mean square residual (RMR), where the value of .109 overshoots the .06 value. This is often regarded as the acceptable criteria in terms of the extent to which sample variances and co-variances differ from their estimates obtained under the assumption that the model is correct. This higher RMR value suggests that there may be some missing correlations between variables not identified in the model. However, the overall theoretical model designed to simultaneously assess the variables in context represents a good estimation of the outcome, given the goodness of fit index is 0.99.

Pathways. All significant pathways are shown in the final SEM model (see Figure 8). The impact of friendship on academic outcomes was greater for English ($\beta = 0.61$) than for mathematics ($\beta = 0.18$). The influence of academic self-concept was also significant (see Figure 8). Students' mathematical self-concept influenced both mathematics grades ($\beta = 0.25$) and English grades ($\beta = 0.22$). Interestingly, the degree to which students' valued numeracy highly influenced their mathematical self-concept ($\beta = 0.83$). Students' English self-concept influenced their English grade ($\beta = 0.14$), whereas mathematics achievement was most strongly influenced by students' mathematical self-concept ($\beta = 0.61$)

The final SEM model in Figure 8 demonstrates that year level indirectly influences results in both mathematics and English via its negative effect on the number of friendship nominations received ($\beta = -0.59$). That is, students at higher year levels are likely to receive fewer friendship nominations. However, at a second step, the number of friendship nominations positively predicted the student results levels for both mathematics and English at the end of the year. In summary, students in lower year levels were likely to receive more friendship nominations.

Compared to males, being female negatively influenced the number of friendship nominations ($\beta = -0.16$) and the extent to which numeracy was valued ($\beta = -0.22$). In contrast, being female positively predicted English end of year results levels ($\beta = 0.16$) and English self-concept ($\beta = 0.22$). English self-concept in turn positively predicted English end of year results ($\beta = 0.14$). Given that the value of numeracy positively predicted proficiency in both English and mathematics, the value of numeracy indirectly predicted higher end of academic year results in both English and mathematics. To put it another way, students who were female were likely to obtain higher scores for English self-concept and for English end of year results. In contrast, male students were likely to obtain higher scores for the value of numeracy, and thus higher scores for proficiency in both English and mathematics. Indirectly, males with higher scores for numeracy were likely to obtain higher results at the end of year for mathematics and English.

Finally, in the present study, single-sex schooling was found to be a better predictor not only of proficiency in English but also mathematics and English end of year results when compared to co-educational schools. However, type of school (co-educational) also positively predicted the value of numeracy ($\beta = 0.12$), which, as stated previously, has a positive effect not only on scores for mathematics and English proficiency, but also on end of year results for both mathematics and English. One interpretation is that while students in

single-gender schools tend to do well in both mathematics and English (direct effect), to the extent that students in co-educational schools value numeracy, they are also likely to do well in terms of end of year mathematics and English results.

Qualitative Analysis

Word Count. An initial check was undertaken on the relative counts of the concepts and words for the students in the low friendship group compared with the students from the high friendship group (see Table 28).

Table 28

Leximancer Analysis – Word Ranking Low and High Friendship Group Interviews n = 21

Word-Like	Count	Relevance	Word-Like	Count	Relevance
friends	107	08%	friends	87	10%
school	75	05%	school	49	05%
person	73	05%	person	45	05%
better	56	04%	play	37	04%
work	54	04%	work	36	04%
class	38	03%	better	33	04%
time	34	02%	sport	29	03%
play	27	02%	subjects	21	02%
parents	27	02%	home	20	02%
home	25	02%	time	19	02%
subjects	24	02%	parents	18	02%
talk	19	01%	year	16	02%
sport	19	01%	club	14	02%
year	19	01%	class	14	02%
group	18	01%	talk	14	02%
club	17	01%	problem	9	01%
happy	12	01%	strength	7	01%
outside	11	01%	happy	5	01%
problem	7	01%	group	3	00%
strength	3	00%	outside	2	00%
Tag	Count	Relevance	Tag	Count	Relevance
FOLDER2: low pop stdts	1369	100%	FOLDER2: high pop stdts	905	100%

The students in the low friendship group used the word *play* (2%) half as frequently as did the high friendship group (4%). Students in the high friendship group used the word *friend* slightly more frequently (10%) compared to those students in the low friendship group (8%). Students in the low friendship and high friendship groups used the words *school* and *person* at the same rate of 5%. An examination of the relative counts of the word usage of the low friendship and high friendship groups was made to ascertain any qualitative differences between the two groups (see Table 29). This examination involved the

identification of words used exclusively by one group of students only. Results revealed no significant differences between the low friendship group and the high friendship group in terms of the key words and concepts used.

Table 29

Leximancer Analysis: Word Usage Ranking From Student Interviews, Comparison of Low and High Friendship Groups n =37

Word	Relative Count %	
	Low Group	High Group
Friends	8	10
School	5	5
Person	5	5
Better	4	4
Work	4	4
Class	3	2
Time	2	2
Play	2	4
Parents	2	2
Home	2	2
Subjects	2	2
Talk	1	2
Sport	1	3
Year	1	2
Group	1	0
Club	1	2
Happy	1	1
Outside	1	0
Problem	1	1
Strength	0	1

Word Groupings. The words used by students in the high friendship group were characterised by clustering into three related groups: friends, school, and person. They were least likely to use concepts such as problem, strength, happy, group, or outside. High popularity students commented about school in terms of having to do the school part, having to do sport for school and club as well, and swimming in the club. High friendship students also commented about friends in terms of friends beating them at a few things, doing different things at home, always being with their friends, needing to talk with friends, and having made friends at the school. High friendship students commented about the theme of person in terms of not disclosing confidences, being better than other people, school subjects, funny people in their class, and being a happy, funny and sociable person. They also commented about year in terms of being age champion and having ability in art. They commented about group in terms of being in the top group in mathematics, and being in an outside group such as playing touch football.

Concept analysis of interviews with low friendship and high friendship students.

Figure 9 graphically represents a conceptual map of the students' interview responses for the low friendship group and Figure 10 graphically represents a conceptual map for the students' interview responses for the high friendship group. A review of the verbal patterns and taxonomies of the sample of students comprising the low friendship group (see Figure 9) compared with the sample of students comprising the high friendship group (see Figure 10) indicates some slight qualitative and quantitative differences. After excluding two concepts more closely related to the interviewer than the participants (*question, happen*) and merging two words (*work, works*), the words used by the low friendship students were characterised by clustering into three related groups: friends, time, and school. The locus of the low friendship group was within the school theme.

In terms of the friends concept, students in the low friendship group commented about friends in terms of winning and losing, being smart, as having many friends, being in a tight group, having a best friend within their year level, and their greatest strength as being able to help their friends. Students also commented about school in terms of enjoying school, being good at school work, being different at school from home, training and playing on the school grounds, and playing only school football. Participants commented about time in terms of there not being enough, being with friends most of the time, and being happy most of the time.

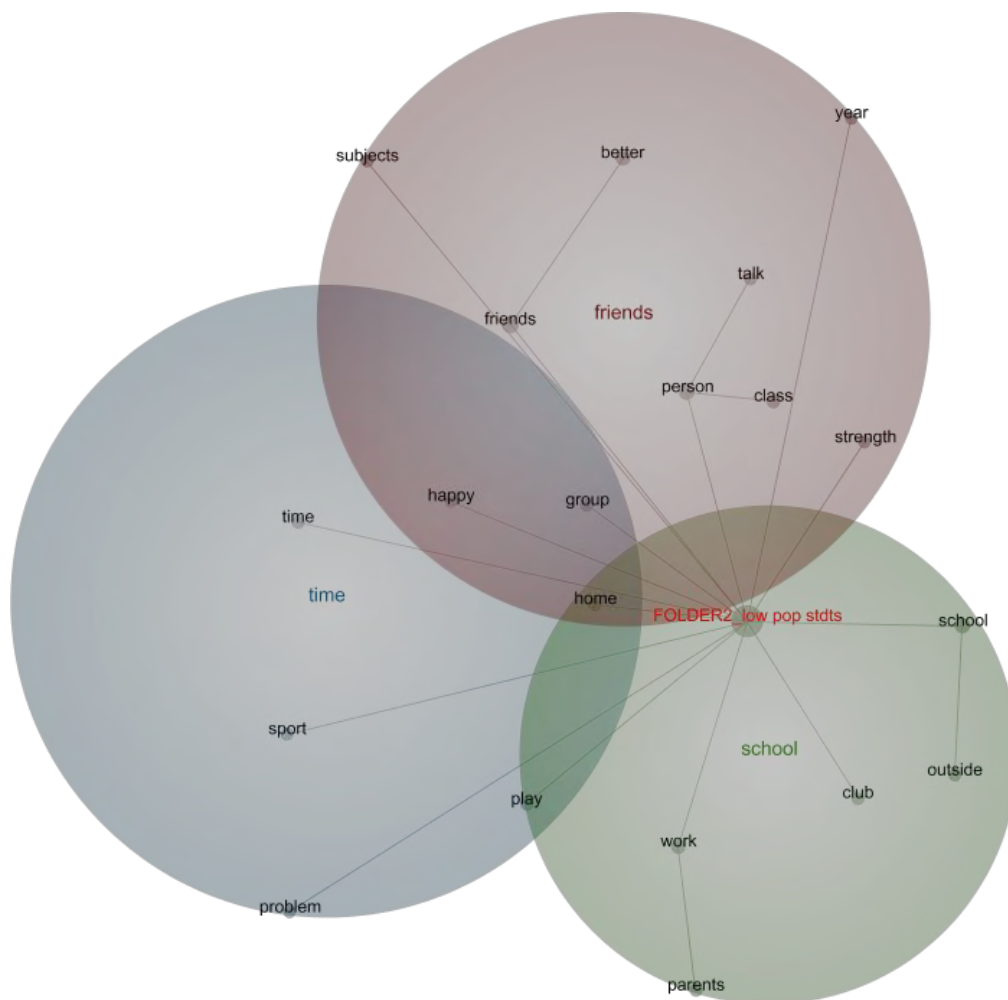


Figure 9. Leximancer analysis of interview transcripts for Low Friendship group students $n =$

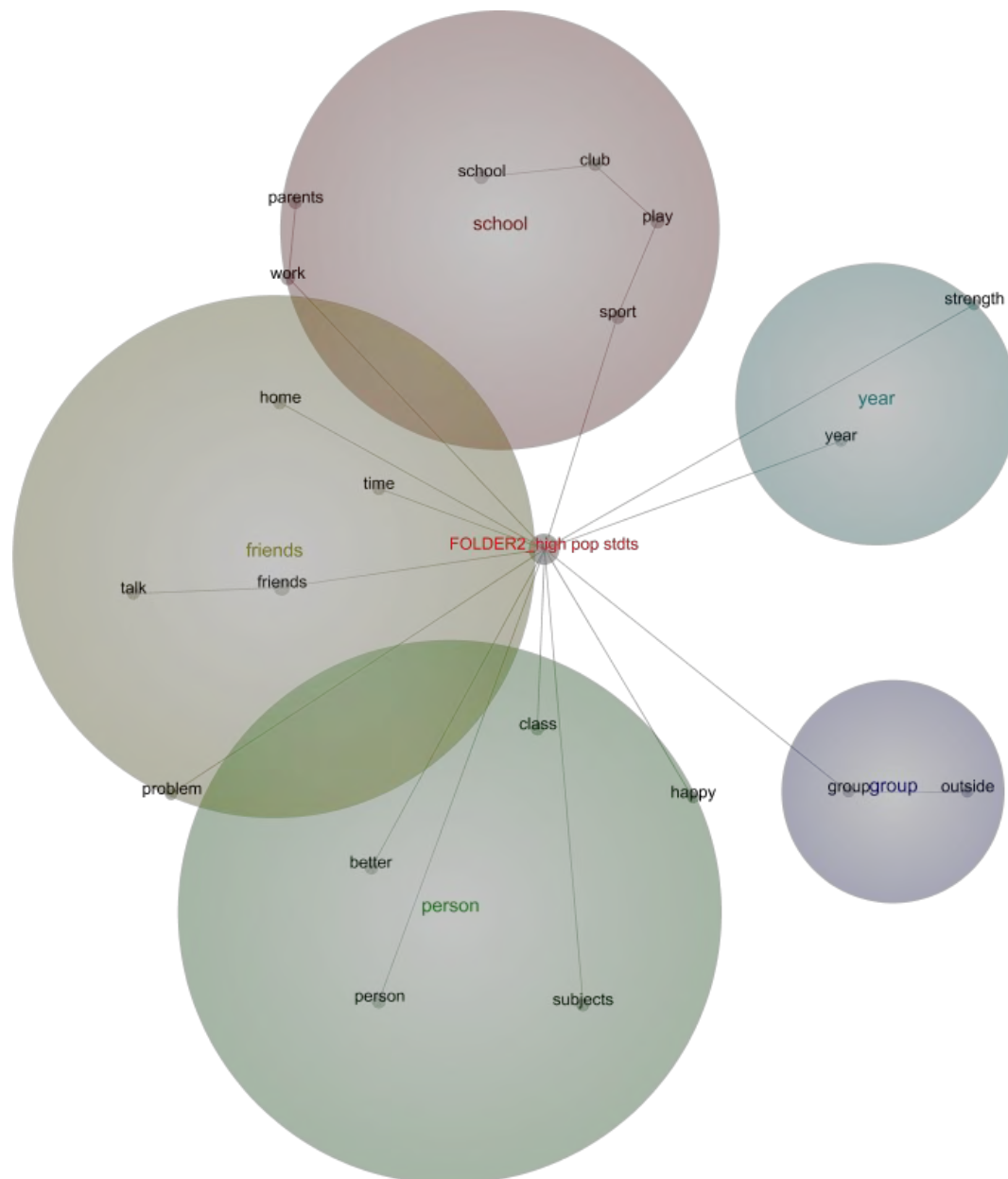


Figure 10 Leximancer analysis of interview transcripts for High Friendship group students $n = 16$

Interviews of Students Scoring High or Low on Friendship Domain

Quantitative comparison of identified low versus high friendship groups. A set of ANOVAs were carried out to examine the extent to which these friendship grouping predicted outcomes on the 33 scale scores. Friendship level did in fact predict outcomes in two cases at near significant levels ($p < .02$ after Bonferonni family-wise adjustment). The

two scales of interest were Friends as caring ($p<.01$) and Class friends ($p<.01$). In both cases, participants from the high friendship group obtained significantly higher scores than did those from the low friendship group, consistent with qualitative expectations.

Thematic analysis of interviews with low friendship and high friendship

students. While most of the students were able to provide a response to question one “Describe yourself”, one student in the low friendship group had difficulty with providing a response at all. Half of the students in the high friendship group described themselves as hard working and seeking help when required. This was perhaps best demonstrated by one student who noted that “I would describe myself as quite a good student and I work very hard to get my grades up”. The number of students in the low friendship category differed in respect to the high friendship group in that only a quarter of the low friendship interviewees mentioned working hard at school, and no interviewees actually mentioned seeking help at school.

A noticeable theme noticed across both high and low friendship groups was the mention of being distracted at school. There was no significant difference in the two groups and it is noted that the phenomenon of being distracted at school is not an uncommon occurrence in an adolescent education setting. One of the students in the low friendship group noted that, “Well, when I’m at home I don’t laugh and muck around as much as I do at school”. In a similar vein, one of the high friendship summarised his situation succinctly as, “I get distracted easily”.

On question two regarding favourite subjects, there was a pattern in the interviews which revealed that students noted more differences in respect to their favourite subjects at school than they did similarities. For some students, however, there was a real difficulty in articulating their favourite subjects. Interestingly these students were in the high friendship

group with one student noting. "I don't like school" whereas another noted, "I describe myself outgoing in many subjects; I have a passion for a few and not so much for others."

Students in the low friendship group demonstrated a marked preference for engaging in manual arts and trade-based subjects when compared to students in the high friendship group. In addition, students in the low friendship group noted less interest in Health and Physical Education (3 out of 21), compared to at least half of the students in the high friendship group with students in the high group making comments such as, "Well I like PE 'cause I'm a sporty person, yeah I chase pretty good".

There was a far greater interest in the subject area of Science for the low friendship group (9 of 21 low group interviewees) with one of the students noting, "With science, I just enjoy doing the experiments and learning about new things." The interest in Science from this group was compared to a relatively low interest level in the high friendship group interviewees where only 3 of the 16 students noted it as a subject of interest. A final noticeable difference was in respect to the subject area of Art where a quarter of the high friendship group (4 out of 16) reporting it as a favourite subject compared to just under ten per cent in the low friendship group (2 out of 21 students). In terms of similarities, both groups reported a similar level of interest in mathematics and English as subject study areas. On question three where students were asked to describe a typical weekend, students in the high friendship group all reported being involved in sport on the weekends. This was similar to the low friendship group although there were two students in that group who mentioned that the only things they did on the weekend were, "school work and rest", and "going to town". Popular sports for the students included AFL, cricket, soccer, volleyball, netball, rugby and basketball. Other weekend activities across the students interviewed included looking after horses, watching movies with friends, Indian dancing lessons, dancing, being in a band, learning how to plait whips and going to town to go shopping. The mention of

spending time with friends on the weekend was fairly consistent across both groups; however, it was noted that only students in the high friendship group actually mentioned having their friends come over to their own homes to socialise. This was not mentioned by any student in the low friendship group.

When students were asked to consider terms to describe their best friend, there was a similar level of agreement between the groups that the students' best friends were hard workers. All students agreed that their best friends were helpful to them. There was a significant difference between the friendship groups in regard to the description of their best friends being moody with approximately double the number of students in the high friendship group describing their best friend as moody. Similar levels of agreement between the groups were evident in respect to perceptions of their best friends being attractive, sporty, and disorganised.

The majority of students in the high and low friendship groups were able to describe their best friend. The only exception to this was one student from the low friendship group who asked, "What happens if I don't have a best friend? It's just a good group". A common theme across both the low and high friendship groups was in regard to the how caring their best friend is. One of low friendship students described his best friend as, "He's a little bit slow, but always there for you. He helps me get along." In a similar sentiment, a high friendship noted that her best friend is "caring, and is there for me when I need her." The high friendship group described their best friend in terms such as being 'funny', 'caring', 'supportive', and 'being there for me'. In comparison, the low friendship group described their best friends in terms such as 'helpful', 'caring', 'academically capable', and simply 'being present' in their lives.

In terms of identifying an adult career, the clear majority of students in the high friendship group nominated a range of professions involving university study such as

veterinarian, teacher, physiotherapist, engineer and teacher. Students in the high friendship group were interested in the building trade, although the rate of this interest was three times less than those students interested in trades from the low friendship group. Students in the low friendship nominated, in the main, a range of trade based careers such as cook, mechanic, diesel fitter, oil rig driller, and hairdresser. Students in this group also had career ambitions encompassing professions such as medicine, marine science and information technology, although this was at half the rate of those students in the high friendship group.

On the question relating to what was liked about their school, the vast majority of students in the high friendship group nominated friendship and socialising as the aspects they enjoy the most about their time at school. These sentiments were often coupled with statements expressing an interest in the academic side of their schooling in addition to the friendship component. For example, one student commented that, “As I said before, coming and seeing my friends, and getting a good education and just – I like to try new things at school.”

While they reported some interest in the friendship aspects of school, the low friendship group reported this at half the rate of the high friendship group. The low friendship group reported various other reasons for liking school such as sport, different opportunities to experience life away from isolated family properties, being involved in the community, and studying Drama as a school subject.

In reflecting on things not liked about school, a common element for both groups was not enjoying homework and assessment tasks. Similarly, there was general consensus from both groups that certain teachers contributed to a less than satisfactory schooling experience. The low friendship group mentioned negative social interactions as contributing to a less enjoyable experience of schooling. For example, one student noted, “Well sometimes there might be a few people who pick on me and stuff like that. Sometimes when I’m in the

classroom there might be a few questions that I just cannot get. Then a few other people might say like how can you not get that answer and stuff like that”. The high friendship group had two students who reported liking school and the absence of any negative schooling experiences. This group only recorded one student who reported issues with other students as factors in them not liking school such that, “Sometimes other people are a bit moody and, yeah, there’s some teachers I don’t like”. This correlates with the higher proportion of students in the high friendship group who agreed that their best friend was moody (see Question 5). Interestingly, students in the high group also mentioned having to “do the school part” and “actually having to work” as factors they did not enjoy about their schooling experience.

On questions relating to parental occupation, students in the high friendship group reported having parents employed in professional capacities at nearly double the rate of those students in the low friendship group. The most common occupation for parents of students in the low friendship group was farming and the most common occupation for parents of students in the high friendship group was teaching.

Chapter Summary

In this chapter, research findings of the present study were reported with regards to students’ self-reported ratings of their psychological indices, their self-reported ratings of classroom environment, and academic achievement results. The impact of friendship was found to be greater for English than for mathematics. Self-concept was also found to be a significant influence, particularly academic self-concept relating to English and mathematics. Single-sex schooling was found to be a better predictor of mathematics and English end of school year results when compared to co-educational schools. The second aspect to be reported on in this chapter involved the results of the qualitative interview data using Leximancer software. The ways in which friendship contributed to social-emotional

adjustment and academic achievement was reported. Analysis of the interview data revealed some qualitative and quantitative differences between these groups. Low friendship students were characterised by clustering into three related word groups: friends, time, and school. In comparison, the words used by students in the high friendship group were characterised by clustering into three related groups: friends, school, and person.

Chapter 5: Discussion

The purpose of this dissertation was to empirically examine the importance of friendships to students within a middle years educational environment, and to examine the links between students' friendships, students' adjustment and academic achievement. The psycho-social variables in the present study were found to be interactive, and learning was seen to be multi-dimensional. While the present chapter expands on the notable findings of the present study, it is useful to have a broad picture of the research questions and the relevant findings. The summary of findings below articulates the notable findings from the current research before a more detailed analysis is provided. Limitations of the research are discussed, opportunities for future research are explored, and implications for educators are examined.

Research Question 1: What is the influence of friendship patterns on middle school students' mathematics performance?

Receiving higher mathematics results was positively associated with receiving more friendship nominations and receiving higher English results, and negatively associated with attending co-educational schools.

Research Question 2: What is the influence of friendship patterns on middle school students' English performance?

The present study found that students who received more friendship nominations were more likely to achieve better academic outcomes in English. This result was demonstrated in both the stepwise regressions and the structural equation model.

Research Question 3: What are the interactive influences between friendship and academic achievement in mathematics and English in the middle school years?

The present study demonstrated that friendship is a critical factor for academic performance in both mathematics and English for students in the middle school years. The

number of friendship nominations received positively predicted academic achievement outcomes at the end of the academic year for both curriculum areas.

Research Question 4: What is the validity of the Children's Value Profile for use with adolescent students?

The Children's Values Profile (CVP) was used in the present study as an assessment tool to measure student values across a range of dimensions (CVP; Fyffe, 2006). In the original norming sample used to investigate the factor structure of the CVP, upper primary school children were the cohort (see Appendix J). The original validation study of the CVP identified seven factors relating to student's self-reported values, namely: Behaviour, Academic Progress, Self-Concept, Social, Emotional Intelligence, World View, and School Climate (Fyffe et al., 2004). While acknowledging the theoretical development of the measure, the present study was the first study to extend the measure for use in an adolescent population. The present study revealed a 12 factor structure for use with an adolescent population, compared with the original seven factor structure measure for primary school children. The factors were identified as: Behaviour; World View and Emotional Intelligence (social competence); School Climate; Self-Concept (reading); Self-Concept (relationship with parents); Emotional Intelligence (self-awareness); Self-Concept (maths); Self-Expression; Self-Concept(ability), Behaviour (playing by the rules), Self-expression (health values); Having experienced bullying; Emotional intelligence (motivation); and Leadership. Of specific interest was a new stand-alone factor for adolescents: Future Focus. The present study, therefore, validates the use of the Children's Value Profile for use in educational settings with early adolescents.

Research Question 5: What are gender differences on the measures of friendship patterns and quality, adjustment, coping skills, self-concept, personal values, classroom environment and academic achievement?

There were a number of significant gender differences revealed in the present study across a number of measures. In terms of friendship quality, females reported higher friendship quality, particularly in the critical aspects of caring interactions and companionship. For adjustment, females had a higher level of perceived well-being compared to males. In regards to coping, females sought help from their friends more than males, and used more problem solving strategies. For self-concept, females viewed themselves as more honest than males with higher levels of anxiety. For students' values, females were more likely than males to describe themselves as valuing rules, being more compassionate, and artistic. Males were more likely than females to value sports and to report having been bullied. Finally, in terms of classroom environment, females were more likely than males to report that their classroom teacher fostered a focus on classwork.

Research Question 6: What are the quantitative and qualitative differences between high and low friendship groups?

In a quantitative analysis, the present study revealed a number of significant differences between high and low friendship groups. High friendship students were noted to demonstrate higher levels of satisfaction from the companionship benefits of friendship, felt better about their physical self-concept, were more confident in dealing with same-sex friends and were more likely to report higher levels of classroom friendship interactions than those of lower friendship status.

In the qualitative analysis, students who were higher in friendship nominations were more likely to use the words 'friend' and 'play' in their conversation than those of lower friendship status. Students who were higher in friendship status demonstrated a preference for Art as a subject, whereas those in the lower friendship group demonstrated a greater interest in the manual arts-based subjects at school. Both friendship groups described themselves as distracted at school and both groups mentioned spending time with their

friends on the weekend. In addition, both friendship groups described their best friends as being caring as well as hard workers at school. Both groups reported not enjoying homework and assessment tasks.

Correlations between Psycho-social Functioning and Academic Achievement

This study examined the importance of friendships to students within a middle years environment, and its links to students' adjustment and academic achievement. The most notable correlations were between age in months and year level ($r = .91$). Beyond that, receiving friendship nominations was positively associated at a significant level with being male, attending a higher SES school and attending a co-educational school. In contrast, receiving friendship nominations was significantly negatively associated with both age in months and year level. This finding is in general agreement with the work of Kenny and colleagues (2013) who posited that levels of support from peers increase initially in early adolescence and decline by mid to late adolescence.

The Role of Gender

The quantitative and qualitative data from the psycho-social instruments were analysed to explore gender differences. It was demonstrated that female students were more likely than males to describe their relationship quality with their best friend as higher in aspects of caring interactions and companionship. This finding is congruent with previous work suggesting that girls attribute a higher quality of relationship with their friends than boys, particularly in respect to support, closeness, disclosure and lower levels of conflict (Demir & Davidson, 2013; Ehrlich et al., 2012; Kenny et al., 2013; Scharf, 2013; Way, 2013). Further, the findings of the present study reinforce the notion that girls and boys differ in the levels of intimacy in their friendships (Mackinnon, 2012). In terms of mental health, female students perceived a higher level of well-being than males, and a greater ability to cope by seeking help from their friends and by using problem solving strategies.

Again, these findings are consistent with previous work suggesting that girls adopt a problem-solving approach when confronting stressful situations (Ayres & Leaper, 2013; Piko, 2001; Wang et al., 2013). In comparison, males were more likely to place importance on the value of sports participation, were likely to have experience with receiving bullying in the school context, and viewed themselves as less honest compared to female students (Caravita & Cillessen, 2012).

The Effect of the School Environment

Typically, there is little evidence in the literature to suggest an advantage of single-sex or co-educational settings across a range of achievement, psychosocial development, and socio-emotional adjustment indices (Nagengast, Marsh, & Hau, 2013; Yates, 2011). The present study revealed that students' received lower end of year English and mathematics results in a co-educational setting when compared with students in a single-sex school setting. This finding is of interest as there is intense debate in the literature as to the effects of attending co-educational versus single-sex schools (Nagengast et al., 2013).

There are a number of possible explanations for this. First, it could be that in a co-educational school, boys and girls compete for each other's attention and this detracts from their overall learning due to distraction from the opposite sex. There is the potential for these behaviours to be viewed as a result of childhood socialization reflecting norms of masculinity and femininity amplified to obtain the attention of the opposite sex (Gibb, Fergusson, & Horwood, 2008). Second, it could be that there is some reputation management on the part of girls who are keen to maintain their social status (Nathan, Houghton, Tan & Carroll, 2011). Hay and Ashman (2012) note that girls' general self-attributes, via gender stereotyping, is thought to decrease girls' academic achievement motivation and encourage girls to set low school aspirations. Thus, it may be that the findings of the present study are a result of girls setting lower benchmarks for themselves at the cost of maintaining reputational

status within the co-educational peer group. Third, it could also be that there is a greater academic diversity within this cohort which means that when the students are compared with each other they are likely to receive lower scores as a result of variability. Fourth, there is evidence in the literature that educational aspirations appear to be better fostered in single-sex schools and it may be that the results of the present study reflect such aspirational achievement (Nagengast et al., 2013).

Attending co-educational schools positively predicted the value of numeracy which had a positive effect on mathematics and English self-concept, but also on end of year mathematics and English results. While students in single gender schools tended to do well in mathematics and English in a direct effect, to the extent to which students in co-educational schools valued numeracy, they were also likely to do well in terms of end of year mathematics and English results. The critical point of this finding is the importance of numeracy in having such a strong effect on students' education, in both co-educational and single-sex schools. The importance of mathematics achievement has been considered before in the literature, but this finding in the context of multiple variables and strong SEM modelling fills a gap in the research of on the significance of mathematics in students' overall learning. This has significance to classroom practice and pedagogy.

The Importance of Friendship and Adjustment to Academic Achievement

A key finding of the present study was that friendship and adjustment factors were critical in the academic lives of early adolescent students. This finding is in accordance with prior research indicating the positive relationship between peer relationships and academic outcomes (Resnick et al., 1997), and consistent with theoretical understandings of learning occurring in the context of social interactions (Vygotsky, 1978). Indeed, the number of friendship nominations received in the present study positively predicted academic achievement outcomes at the end of the school year for students in both mathematics and

English results. The results of the present study are also consistent with previous studies which have demonstrated that students with more school friends have higher academic achievement (Flook et al., 2005; Wentzel et al., 2004) and higher academic self-efficacy (Purdie, Carroll, & Roche, 2004).

The present study also highlighted the importance of self-concept in both English and mathematics achievement. As highlighted by Hay, Ashman and van Kraayenoord (1998), students who lacked social success and positive social interactions with classmates were also more likely to have poorer outcomes across a wide spectrum of adjustment indices. This is supported by research indicating that perceptions of friends' academic behaviours are positively related to mathematics self-concept (Jones, Audley-Piotrowski, & Kiefer, 2012). Low self-concept has also been demonstrated to be more prevalent in those students with poor social relationships (Wentzel et al., 2004; Wenz-Gross et al., 1997).

The present findings demonstrate that social skills are critical for student social and academic success. That is, if students have the necessary social skills to engage with their peers and form friendships, they have a greater chance of achieving better academic outcomes. While not necessarily being predictive, the skills of friendship share many similarities to those skills needed in an academic context. For example, the skills of listening, attending, synthesising, coping with challenging situations and understanding nuance are critical to friendship as well as processing what the teacher is saying and completing classroom based learning tasks (Scharf, 2013). They are also skills with which early adolescents may utilise in order to develop secure attachments with their friends in the peer network (Law et al., 2013). The findings of the present study are in accordance with the key theoretical perspectives of social constructivism (Vygotsky, 1978) and attachment theory (Bowlby, 1969).

From a Vygotskian perspective, the findings support the notion that learning is a socially constructed activity; it does not simply take place at the level of the individual (Schreiber & Valle, 2013). Indeed there is evidence from the present study to suggest that because of the influence of social interactions upon academic outcomes, Vygotsky's (1978) notion that students' interactions with their environment are critical to their development is reinforced (Phillipson, 2009; Vygotsky, 1978). Academic achievement in the present study may be viewed, therefore, as a critical context in which individual students interact with others in the learning enterprise (Hay et al., 2013). Further to this is the notion that collaboration, dialogue, and perception of language all play a part in social constructivism (Vygotsky, 1978). There is a possibility that greater effects of friendship on English results, when compared with mathematics results, were as a result of a greater opportunity for in-class dialogue and discussion. In terms of the relationship between these academic achievement and friendship findings, Hamm and Faircloth (2005) explained that previous investigations have failed to consider curriculum and subject content differences. For instance, Hamm and Faircloth have argued that mathematics and English content lessons operated differently, with teachers of mathematics creating fewer inter-peer social relationships within their classrooms and for these teachers to be more focused on specific mathematical content. As a result, it is less likely for students to be socially engaged in the mathematics classroom to the same extent as an English classroom. Similarly, Patrick, Turner, Meyer, and Midgley (2003) contended that teachers of mathematics needed to do more to establish a greater sense of student belonging, student mathematical self-concept and student commitment within their classrooms. Indeed, Sakiz and colleagues (2013) noted that those mathematics teachers who focused more on the socio-emotional well-being of their students had students who were more engaged in mathematics and learning. Those students also reported a higher level of enjoyment of the subject.

From the perspective of attachment theory (Bowlby, 1969), adolescents are apt to form new peer attachment bonds away from primary care givers. Those attachment bonds are significant and those who are able to form significant and enduring bonds are more likely to experience more secure peer attachment along with the academic and social benefits that this entails. In the present study, friendships were important to academic outcomes which is consistent with the view of attachment theory that the need to feel a secure connection with others is a basic human need (Baumeister & Leary, 1995). Those who are able to do so are more likely to achieve better outcomes across a range of academic and psycho-social indices and the results of the present study reinforce this notion. In exploring why this might be the case, Bergin and Bergin (2009) proposed that insecurely attached children are less likely to be socially competent and tend to have poor quality friendships. Further, they asserted that social competence is foundational to academic achievement because, by its very nature, the schooling process is a social undertaking. Attachment may indeed affect academic achievement via the mediating factor of social competence at school (Bergin & Bergin, 2009; Rubin et al., 2004).

Factors Contributing to Mathematics Achievement

A key finding to emerge from the present study was the importance of friendship on the end of year mathematics achievement levels. The results suggest that students who have a wider friendship base are able to achieve better mathematics results. While this was an important link, it is important to note that the effect of friendship on mathematics achievement was not as significant as it was for English. Simmons and Hay (2010) identified that social relationships were more influential for English results than mathematics and the results of the present study support this finding. There are a number of possible reasons for this outcome. First, there is literature to suggest that the structure of mathematics classrooms is different to that of English classrooms. Mathematics work is characterised as being more

individualistic and competitive in nature with less emphasis of group activity when compared to a typical English classroom (Gherasim et al., 2013). It has been argued that a positive classroom climate fosters positive learning and higher academic achievement (Chadbourne & Pendergast, 2005; Patrick et al., 2003; Rhodes, Camic, Milburn, & Loew, 2009; Sakiz et al., 2012). This difference could reflect a greater focus on cooperative group work, in-class debates, interpretation and discussion in English classrooms (Gambrell, Mazzoni, & Almasi, 2000; Guthrie et al., 2004) and a greater concentration on teaching practices associated with individual mastery and the correct answer in mathematics classrooms (Hamm & Faircloth, 2005; Hay & Booker, 2006; Gherasim et al., 2013). Students who displayed higher levels of resilience to in-class problems have also reported a greater preference for mathematics compared to English; this is claimed because of students' fondness for the challenge of understanding the subject (Chang, 2004).

Factors Contributing to English Achievement

Students who received more friendship nominations were more likely to achieve better academic outcomes in English. This supports the work of Simmons and Hay (2010) who, in their study of 182 Australian early adolescents found that friendship patterns had a significant positive effect of English achievement levels. Students with higher mathematics and English self-concept also achieved better English results. This is consistent with previous work which suggested that students who have better academic self-concepts have been reported to have more friends and fewer social-academic difficulties in the classroom (Hay et al., 1998; Hay & Ashman, 2012).

Students with higher scores for the valuing of numeracy and literacy activities achieved better outcomes in English. Sakiz and colleagues (2012) noted that the behavioural expectations of the classroom teacher when interacting with their students had considerable impact on the nature of the classroom learning environment and student academic

achievement. This was the case in the present study; students whose classroom environment encouraged a work focus were more likely to achieve better English outcomes, but this was not the case for mathematics.

Students who coped by problem solving were likely to obtain higher results for English at the end of year. In exploring this, there is a possibility that the skills involved in problem solving tap into the ways in which students are able to organise themselves and their tasks. Students' ability to organise is a function of an enhanced metacognitive ability and, as such, it is likely that those who are able to use their metacognitive skills to plan out their English tasks are more likely to achieve better English outcomes (Joo, Seo, Joung, & Lee, 2012). In addition, English curriculum tasks ask students to write in a persuasive way and it may be that such skills are likely to lead to better academic outcomes.

While these factors were important in the stepwise regression, the structural equation model suggested the fundamental role of friendship in English achievement at the end of the school year. The results indicated that students who have a wider friendship base were able to achieve better academic results in English. There are a number of possible reasons for this outcome. First, it is thought that students who have the social skills to develop friendships also have the requisite skills to achieve in an English classroom as these classes typically involve discussion, interaction and social connection. Second, it may be that having friends act as a catalyst for social conversation and so, further communication skill development. There is support for the notion that students with more school friends have higher academic achievement (Flook et al., 2005; Wentzel et al., 2004) and higher academic self-efficacy (Purdie et al., 2004). Finally, there is the notion that the assessment regime of middle years English classes favours those students who are more socially capable and are, in some sense, skewed in favour of more sociable students.

Another important finding from the current study is that English results were related to the classroom environment in which the students operated. This finding supports the research of Hamm and Faircloth (2005) who reported that English classrooms were more influenced by social relationship than other curriculum subjects, such as mathematics. Students achieved better academic outcomes when they were involved in a classroom environment which they perceived to have a strong focus on class work. Thus, middle school educators need to strive to maintain balance, support, and focus within their classes in order to maximise students' learning (Flook et al., 2005, Sakiz et al., 2013).

Qualitative Findings

The qualitative component of the present study yielded important information which helped to clarify the role of friendships in the lives of early adolescents. Important factors were revealed relating to subject selection, interactions with parents, talk amongst friends, and friends played a strong role in subject selection in the present study. This finding mirrored the work of Flashman (2013) who reported that adolescents' peers influenced their academic course-taking trajectory. This could reflect common interests with friends. For example, girls who have an interest in reading are more likely to take subjects such as History. There are three main classes of groups apparent in the present study: 1. Friends who do the same subjects as each other at school; 2. Friends who meet outside in groups who may or may not do the same subject as each other; and 3. Friends who are involved around sport and for whom the group tends to be a separate group from school-based friends.

Leximancer text analysis revealed that parents are prominent in the connection between friendship in sport and those friendships outside of the class setting, suggesting that parents may be transporting students to sport or organising activities. It is worthwhile to note that while the present study had a focus on adolescent friendships, parents are nevertheless influential in the facilitation of various aspects of early adolescents' friendships. Put simply,

the influence of friends does not occur in a social vacuum, and other elements of early adolescents' social environments such as parental relationships, membership of community based groups and extended family networks need to be taken into account (Veronneau & Dishion, 2011)

In terms of academic matters, friends are utilised in class to aid academic pursuits such as helping with assignments, and understanding the teacher. The emergent theme demonstrates that aid for academic pursuits is particularly strong within the class environment. Talk was identified as the critical means of maintaining friendship for the students interviewed in the present study. The analysis also maintained that deep conversations occur with the friends that students are actively engaged with in undertaking activities, as opposed to their in-class friends. In terms of social status, results suggested that some of the popular children appear to be ones in which students can confide.

There was a notion in the interview data of 'doing things better' as being associated with an individual person who is a friend. This suggests that friendships foster new activities and this person becomes identified as a person they work with and spend time with. Notions of positive interactions were identified and the target friend was associated with making students feel better. There are possible links in these interactions with Reputation Enhancement Theory with the students in the present study identifying positive non-delinquent identities as a result of their friendship formulation (Smith-Adcock et al., 2013). In regard to the types of contact between friends, text analysis revealed that the main types of contact involved talking with each other, home visits, and interactions at school. This is consistent with the idea that peer interactions take on greater importance in the adolescent years as an increasing amount of time is spent with peers as opposed to family members (Siennick & Osgood, 2012).

Implications for Middle School Educators

There are a number of implications arising for middle school educators from the present study. At a broad level, the findings reinforce Hattie's (2009) assertion that learning is multi-dimensional and that a number of psycho-social factors are interactive in this process. In addition, educators must be aware of the multi-dimensionality of learning and take psycho-social factors as serious components in their planning for teaching and learning activities in the classroom.

The findings of the present study also serve to support Martin's (2005) assertion that teachers who exude optimism and positive expectations heighten the chances of positive engagement from young people. In addition to the importance of a positive classroom social environment in middle schooling, the present findings highlight that student engagement is a vital component to academic achievement (Chadbourne & Pendergast, 2005; Reyes, Brackett, Rivers, White & Salovey, 2012). Such a notion of active learner involvement is central to effective classroom practice using Vygotsky's social cognitivism (Yilmaz, 2011). Learning is seen a social and collaborative activity where students create meaning through their interactions with one another (Schreiber & Valle, 2013; Vygotsky, 1978). Educators play a vital part in the process, therefore, in developing an ethos of academic care for their students (Addison, 2012; Hay & Simmons, 2011). Hattie's (2009) meta-analysis relating to academic achievement emphasised the importance of teachers being able to construct meaningful learning experiences that have clear learning intentions and active engagement in teaching and learning. The results of the present study reinforce such notions and suggest that educators must plan for the content of their lessons as well as the delivery of them. In planning for lessons, Moni and Hay (2008) suggest that teachers ask the following questions from a sociocultural learning perspective: 1. What does this student already know? 2. What can this student do? What are his/her strengths that I can build on? 3. What is this student

interested in? 4. What support do they need to learn? and 5. What will be the indicators of their success in learning?

The present study reinforces that adolescents' perceptions of their friendships are important to their levels of psychological and academic adjustment (Demir & Urberg, 2004). Friendships are seen to be a protective factor that helps students to cope and achieve academically (Brendgen et al., 2001; Ryan & Shim, 2012). Given the busy nature of schools, the results from the present study suggest that the short forms of instruments used in the study (such as the short form of the Self-Description Questionnaire-II) may provide adequate screening measures for school counselors needing to identify those students requiring more targeted assessment and clinical intervention. Given the findings of the relationships between friendship and academic achievement, it is also important for teachers and school counselors to have some form of 'real-time' tracking of student academic performance as dips in performance may be indicative of more pervasive social or emotional issues.

For counsellors and teachers working in the middle years of schooling, the findings of the present study have implications for programming. At a broad level, the findings align with the assertions of Thien and Razak (2012) who suggested that schools must be more flexible, creative, and responsive in order to cater for the needs of 21st century learners. In particular, if students' perceptions of their problem solving abilities are poor and if they demonstrate poor coping and social skills, interventions are needed to address these issues at a classroom and a pastoral care level (McNeely et al., 2002). Teachers have a critical role to play here especially in the context of the classroom environment and the quality of their interactions with students. Further, it is important to plan for student transitions into the middle years of schooling. In particular, educators need to plan effective orientation programs around times of student transitions to new educational environments. If students are able to form positive relationships with their new-found peers, there is evidence from the

present study to suggest that a combination of academic and social-emotional benefits will most likely result.

The findings of the present study also reinforce the need for middle school teachers and counsellors to identify, plan for, and respond to individuals who have social difficulties, particularly for programs that have a focus on improving students' adjustment, self-concept, coping skills, and academic achievement (Flook et al., 2005; Fraser, 1998; Litwack et al., 2012; Rutter & Maughan, 2002). Ideally, teachers and school counsellors should be aware of the introverts in their care and the risk that introversion presents for the formation of friendships, particularly in the context of early adolescent development. This may be of particular importance to teachers of students from other cultures where there are potential language difficulties contributing to engagement issues in class (Nevarez-La Torre, 2012). The potential for intervention programs to target specific areas of social-emotional competence offers the opportunity to ameliorate possible long-term negative consequences of social difficulties and promote better attachment and adjustment in adolescents (Bergin & Bergin, 2009; Scharf, 2013). Further, there is evidence to support the notion that such social and emotional development programs contribute to student success, both within school, and on standardised tests (Brackett, Rivers, Reyes, & Salovey, 2012). The results of the present study also suggest that such programs may be more advantageous to male students, especially in light of their apparent need to develop better coping mechanisms by seeking help from their friends and utilising problem solving strategies (Ayres & Leaper, 2013). Interventions need to be highly planned and resourced with evidence-based programs offering the maximum benefit to participants. Examples of protective and proactive programs in the area of friendships, social relations, and mental health include mindfulness activities (Felter, Doerner, Jones, Kaye & Merrell, 2013); the Resourceful Adolescent Program: RAP (Shochet, Holland, & Whitefield, 1997), and FRIENDS (Barrett, Webster, & Turner, 2000).

Limitations and Future Directions

Future researchers may wish to expand on the present method of basing friendship nominations on self-report to include teachers' observations of students' friendship groups. A possible limitation of the study is its reliance on paper-and-pencil data collection, and a future study may include observational measures. This would be useful in terms of reducing the risk of shared method variance. It may also be useful to consider the use of student data on classroom achievement as generated by their classroom teachers when examining students' academic achievement. This may provide greater insight into the links between students' academic achievement and the social learning environments in which the students operate. Alternatively, future researchers may wish to make use of standardised academic assessments to measure and collate academic performance. Finally, it should be noted that the present study was based on a normal population; future researchers may wish to examine specific populations such as those students with clinical levels of social-emotional issues to consider the need for further targeted interventions.

Summary and Conclusion

The present investigation research explored the academic achievement of early adolescents and the interactions between the following six psycho-social variables: friendship patterns, emotional and behavioural development, coping skills, self-concept, personal values, and the classroom learning environment.

Using structural equation modeling, it was demonstrated that the students' friendship patterns and social relations significantly influenced the students' English and mathematics academic outcomes. The final measurement model demonstrated that those students who had more friendships achieved better end of year academic results in the curriculum areas of mathematics and English. This model also highlighted the importance of students' level of self-concept in English and mathematics on students' English and mathematics achievement.

The importance of students' personal values yielded greater achievement in English predicted by higher value placed on numeracy and literacy activities. Because the Children's Values Profile (Fyffe, 2006) is a recently developed psycho-social instrument and, was untested with early adolescent students, its structural properties were of interest in this study. The Children's Values Profile yielded a twelve factor solution when administered to an adolescent population in the present investigation, compared with its original seven factor structure for primary school aged students. Of specific interest was a newly identified factor for adolescents: Future Focus.

In conclusion, the present study has expanded the research relating to the psychological and academic adjustment of adolescents in a middle school setting. The challenge for counsellors and teachers is to utilise the current findings so that individuals experiencing friendship and social difficulties in the middle school might benefit from programming, pedagogy, and support to bring about positive changes to their well-being and academic achievement.

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Appendix A

University of Tasmania Ethics Approval

COPY

MEMORANDUM

Private Bag 01 Hobart
Tasmania 7001 Australia
Telephone (03) 6226 2764
Facsimile (03) 6226 7148
Marilyn.Knott@utas.edu.au
<http://www.research.utas.edu.au/index.htm>



HUMAN RESEARCH ETHICS COMMITTEE (TASMANIA) NETWORK

PRIOR APPROVAL – Ethics application approval

27 February 2009

Professor Ian Hay
Faculty of Education
Private Bag 1308
Launceston

Ethics reference: H10466**'Social relationships and academic achievement in adolescence'.****PhD candidate: Nathan Simmons**

Dear Professor Hay

Acting on a mandate from the Tasmania Social Sciences HREC, the Chair of the committee considered and approved the above project on 23 February 2009.

All committees operating under the Human Research Ethics Committee (Tasmania) Network are registered and required to comply with the *National Statement on Ethical Conduct in Human Research* (NHMRC 2007).

Therefore, the Chief Investigator's responsibility is to ensure that:

- 1) All researchers listed on the application comply with HREC approved application.
- 2) Modifications to the application do not proceed until approval is obtained in writing from the HREC.
- 3) The confidentiality and anonymity of all research subjects is maintained at all times, except as required by law.
- 4) Statement 5.5.3 of the National Statement states:

Researchers have a significant responsibility in monitoring approved research as they are in the best position to observe any adverse events or unexpected outcomes. They should report such events or outcomes promptly to the relevant institution/s and ethical review body/ies and take prompt steps to deal with any unexpected risks.

- 5) All participants must be provided with the current Information Sheet and Consent form as approved by the Ethics Committee.
- 6) The Committee is notified if any investigators are added to, or cease involvement with, the project.

A PARTNERSHIP PROGRAM IN CONJUNCTION WITH THE DEPARTMENT OF HEALTH AND HUMAN SERVICES

- 7) This study has approval for 4 years contingent upon annual review. A *Progress Report* is to be provided on the anniversary date of your approval. You will be sent a courtesy reminder closer to this due date.
- 8) A *Final Report* and a copy of the published material, either in full or abstract, must be provided at the end of project.

Yours sincerely

 Ethics Executive Officer

Appendix B

Department of Education Approval to Conduct Research

Department of Education
EDUCATIONAL PERFORMANCE SERVICES

2/99 Bathurst Street, Hobart
GPO Box 169, Hobart, TAS 7001 Australia



File: 1056205

6 October 2010

Mr Nathan Simmons
Faculty of Education
University of Tasmania
Locked Bag 1307
LAUNCESTON TAS 7250

Dear Mr Simmons

Social Relationships and Academic Achievement in Adolescence

Thank you for your recent research application to conduct the above project. I have been advised by the Educational Performance Report Committee that the above research submission adheres to the guidelines established and that there is no objection to the project proceeding.

Please note that you have been given permission to proceed at a general level, and not at individual school level. We have received advice from the principal that approval for this project may proceed at Ogilvie High School.

A copy of your final report should be forwarded to Educational Performance Services, Department of Education, GPO Box 169, Hobart, 7001 at your earliest convenience and within six months of the completion of the research phase.

Yours sincerely

Irene Gray
Manager
(Educational Performance Services)

cc Bill Edmunds

Appendix C

Parent Information Statement and Permission Form

Private Bag 1308 Launceston
Tasmania 7250 Australia
Phone (03) 6324 3144 Fax (03) 6324 3303
Education.Dean@utas.edu.au
www.utas.edu.au



FACULTY OF EDUCATION

Dear Parents / Guardians

12.08.09

I am currently undertaking a Doctor of Philosophy (PhD) at the University of Tasmania in the Faculty of Education, under the supervision of Professor Ian Hay, Dean of the Faculty.

My study is investigating social relationships in adolescence with a focus on how adolescents form their friendships. This is an important topic of interest and at times a concern for both teachers and parents. In my role as a school counsellor and teacher in an independent boys' boarding school in Queensland I am often involved with social relationship issues that arise for adolescent students. I plan to ask students in Years 7 to 9 to complete questionnaires related to this topic. These questionnaires will only take approximately 25 minutes to complete and will be completed in a classroom at school under teacher direction. The survey asks questions about how adolescents see themselves, their schooling, their social environment, and their relationship with others. There are no right or wrong answers; we are looking at students' attitudes.

I am writing to seek your permission for your child to participate in this study. Participation is voluntary and the research data collected will not be used for any school assessment purpose. Your child will be free to withdraw from the study at any time. All information collected from these surveys will be treated as confidential. I have attached a participant information sheet to this letter. Please read the attached participant information sheet and keep it for future reference.

This study has been approved by the Principal of this school. In addition, it has been cleared by the University of Tasmania's Human Research Ethics Committee in accordance with the National Health and Medical Research Council's guidelines.

If you wish to seek clarification regarding the study please speak with me on 04xx xxx xxx or via email at simmonsn@utas.edu.au or my supervisor Professor Ian Hay on 03 6324 3294. My supervisor and I ask that you complete the permission form enclosed and have your child return it to his Mentor by **Thursday 27 August 2009**. I believe that this study will assist our understanding of how schools can assist adolescent students in their social development.

Thank you very much for your assistance and co-operation.

Nathan Simmons
PhD Researcher

INFORMATION STATEMENT
Social Relationships and Academic Achievement in Adolescence

Supervisors

My supervisors are Professor Ian Hay of the University of Tasmania and Dr Stephen Winn of the University of New England.

- Prof Hay can be contacted by email at Education.Dean@utas.edu.au or by phone on (03) 6324 3144.
- Dr Winn can be contacted by email at s.winn@une.edu.au or by phone on (02) 6773 3716.
- I can be contacted by email at simmons@utas.edu.au or phone on xxxx xxx xxx.

Aim of the Study

My aim is to examine the friendships that adolescent students have, and the interaction between social, academic and adjustment factors.

Time Requirements

The questionnaires will take approximately 25 minutes over the course of the 2009 school year. The final component will involve interviews with selected students regarding their friendship choices. A separate permission form will be provided to parents of the selected students for this second component of the data collection.

Methodology

Students will be asked to nominate their friends and complete a questionnaire about one of the friendships that they have. This should take 3 minutes and will be completed at school.

In addition, students will be asked to complete further questionnaires relating to their adjustment and classroom environment. The questionnaires to be administered are: The Strengths & Difficulties Questionnaire, Coping Strategy Indicator – Short Form, Self-Description Questionnaire II – Short Form, Values Scale, What is Happening in this Classroom? Scale, and Friendship Quality Scale. This will take approximately 25 minutes.

Students who are participating will complete the questionnaires under teacher supervision at an allocated location during school hours. The principal researcher (*Nathan Simmons or his delegate*) will be present at the data collection to provide instructions and to answer questions from students. All student data will remain anonymous in the final written form of the research. The final component of the research will involve selected students being interviewed regarding their friendship choices.

Participation

Participation is voluntary. Students can withdraw from the project at any time and there will be no disadvantage if they decide not to participate or withdraw at any time.

Risk to Participants

There is no foreseeable risk to students participating in these surveys, above the risk of everyday life.

Data Security

The data will be kept in a locked filing cabinet at the researcher's office. This will prevent unauthorised access to the information and data. No identifying names will appear on the stored data and documents.

Feedback

Feedback will be available to participants via individual consultation with the researcher, Mr Nathan Simmons, at the conclusion of the study.

University of Tasmania Research Approval

This project has been approved by the Human Research Ethics Committee of the University of Tasmania (Approval No. H10466)

Should you have any complaints concerning the manner in which this research is conducted, please contact the Ethics Executive Officer at the following address:

Ms Jen Bruyn Schmidt
Ethics Executive Officer
HREC (Tasmania) Network
Telephone: (03) 6226 7479
Email: human.ethics@utas.edu.au

Thank you for considering this request.

Kind Regards

Nathan Simmons

Please return to your child's Mentor by
Thursday 27 August 2009

I give permission for my child (please print name)

_____ in Year _____ to participate in
the research project of Mr. Nathan Simmons on, "*Social relationships
in Adolescence*".

I understand that my child is free to withdraw from the study at any
time and that there will be no penalty if my child chooses not to be
involved.

I understand that the information obtained from the study is
confidential and will not be shared with any third parties.

Parent / Guardian Signature: _____

Date: _____

Appendix D

Student Interview Permission Form

Private Bag 1308 Launceston
Tasmania 7250 Australia
Phone (03) 6324 3144 Fax (03) 6324 3303
Education.Dean@utas.edu.au
www.utas.edu.au



FACULTY OF EDUCATION

Dear Students

21.06.10

I am currently undertaking a Doctor of Philosophy (PhD) at the University of Tasmania in the Faculty of Education, under the supervision of Professor Ian Hay, Dean of the Faculty.

Late last year I undertook the initial phase of my project at the Hutchins School. To this end, I am writing to seek your permission to participate in the second phase of my project.

The interview seeks information about how adolescents see themselves, their schooling, their social environment, and their relationship with others. There are no right or wrong answers; we are looking at students' attitudes. The interview will be undertaken by a representative from the University of Tasmania.

I am writing to seek your permission to participate in this important component of the study. Participation is voluntary and the research data collected will not be used for any school assessment purpose. You will be free to withdraw from the study at any time. All information collected from these interviews will be treated as confidential.

This study has been approved by the Principal of this school. In addition, it has been cleared by the University of Tasmania's Human Research Ethics Committee in accordance with the National Health and Medical Research Council's guidelines.

If you wish to seek clarification regarding the study please contact me via email at simmons@utas.edu.au or my supervisor Professor Ian Hay on 03 6324 3294.

Thank you very much for your assistance and co-operation.

Nathan Simmons
PhD Researcher

Student Informed Consent

I agree (please print name) _____ in Year _____
_____ to participate in the research project of Mr. Nathan
Simmons on, "*Social relationships in Adolescence*".

I understand that I have been selected to be interviewed for the
purposes of the second component of the research study, and that this
interview will be voice recorded.

I understand that no identifying details will be used in any publication
arising from this research interview.

I understand that I am free to withdraw from the study at any time and
that there will be no penalty if I choose not to be involved.

I understand that the information obtained from the study is
confidential and will not be shared with any third parties.

Student Signature: _____

Date: _____

Appendix E

*Friendship Nomination Form***Friendship Nomination Form**

Name	
Date of Birth	
Year Level at School?	
Boarder?	<ul style="list-style-type: none"> • Yes or No (please circle)

- PLEASE NOTE THAT THIS INFORMATION IS CONFIDENTIAL.
- IT WILL NOT BE SHARED WITH OTHER PEOPLE AT SCHOOL.
- THIS PAPER WILL BE STORED IN A LOCKED FILING CABINET.

My best friend in my Year level here at school is:

Name: _____

Apart from my best friend, other friends I have in my Year level at school are (you can write up to ten names in the boxes below):

Appendix F

Friendship Quality Scale

(Bukowski, Hoza, & Boivin, 1994)

This scale has been removed for copyright or proprietary reasons

Appendix G

Strengths and Difficulties Questionnaire

(Goodman, 1997)

This questionnaire has been removed for copyright
or proprietary reasons

Appendix H

Coping Strategy Indicator – Short Form

(Ellis, 2004)

This indicator has been removed for copyright or proprietary reasons

Appendix I

Self-Description Questionnaire – Second Edition (Short Form)

Ellis, 2004

This questionnaire has been removed
for copyright or proprietary reasons

Appendix J

Children's Value Profile

(Fyffe, 2006)

This value profile has been removed for
copyright or proprietary reasons

Appendix K

What is Happening in this Classroom? Questionnaire

Fraser et al., 1996

This questionnaire has been removed for
copyright or proprietary reasons

Appendix L

Qualitative Interview Questions

Q1. How would you describe yourself at school?

Q2. List your favourite subjects at school.

Q3. List what you do on the weekends

Q4. Which of the following words describes your best friend:

Works hard Helpful Moody Attractive Sporty Disorganised

Q5. What other words could describe your friend?

Q6. What do you want to do when you leave school?

Q7. What do you like about school?

Q8. What don't you like about school?

Q9. What do your mum & dad do for work?